THREE VALLEYS REGIONAL URBAN WATER MANAGEMENT PLAN

APRIL 2026

PUBLIC REVIEW DRAFT

2025 Part 1: Regional Context



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Prepared by GEI Consultants, Inc. and Water Systems Consulting, Inc.

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Standard Limitations and Disclaimer

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Acronyms and Abbreviations

Acronym	Definition
AB1668	Assembly Bill 1668
AF	Acre-feet
AFY	acre-feet per year
APA	Allowed Pumping Allocation
AWUR	Annual Water Use Report
AWWA	American Water Works Association
BPOU	Baldwin Park Operable Unit
CEC	Contaminants of Emerging Concern
cfs	cubic feet per second
CIC	Covina Irrigating Company
CIMIS	California Irrigation Management Information System
CRA	Colorado River Aqueduct
CVWC	Covina Valley Water Company
CWC	California Water Code
DAC	disadvantaged community
DDW	Division of Drinking Water
DBP	Disinfection Byproduct
DCP	Drought Contingency Plan
DCR	Delivery Capability Report
DMM	demand management measure
DRA	Drought Risk Assessment
DVL	Diamond Valley Lake
DWR	California Department of Water Resources
DYYP	Dry-Year Yield Program
ET	evapotranspiration
ETo	reference evapotranspiration
FY	Fiscal year
GAC	Granular Activated Carbon
GAMA	Groundwater Ambient Monitoring and Assessment Program
GHG	greenhouse gas
GIS	geographic information systems
GMP	Groundwater Management Plan
GPCD	gallons per capita per day
gpmd	gallons per mile of pipe per day
gpscd	gallons per service connection per day
GSA	Groundwater Sustainability Agency
GSP	Groundwater Sustainability Plan
IEUA	Inland Empire Utilities Agency
JWL	Joint Water Line

Acronym	Definition
LACSD	Los Angeles County Sanitation Districts
LACDPW	Los Angeles County Department of Public Works
LDX	Local Data Exchange
LRP	Local Resources Program
MAF	million acre-feet
MCL	Maximum Contaminant Level
MHI	Median Household Income
MGD	million gallons per day
mg/L	milligrams per liter
MWD	Metropolitan Water District of Southern California
MWTP	Miramar Water Treatment Plant
NTU	Nephelometric Turbidity Unit
OBMP	Optimum Basin Management Program
OSY	Operating Safe Yield
PBWA	Puente Basin Water Agency
PCE	Tetrachloroethene
PFAS	Per- and polyfluoroalkyl substances
PVPA	Pomona Valley Protective Association
RHNA	Regional Housing Needs Assessment
RO	reverse osmosis
RUWMP	Regional Urban Water Management Plan
SB1157	Senate Bill 1157
SB606	Senate Bill 606
SCAG	Southern California Association of Governments
SGMA	Sustainable Groundwater Management Act
SJCWRP	San Jose Creek Water Reclamation Plant
SWP	State Water Project
SWRCB	State Water Resources Control Board
TAZs	traffic analysis zones
TCE	Trichloroethene
TDS	Total Dissolved Solids
TOC	Total Organic Carbon
TCP	1,2,3-Trichloropropane
TVMWD	Three Valleys Municipal Water District
USACE	United States Army Corps of Engineers
USGS	United States Geological Survey
UWMP	Urban Water Management Plan
UWMP Act	Urban Water Management Planning Act
VHWC	Valencia Heights Water Company
VIC	Variable Infiltration Capacity
VOC	Volatile Organic Compounds
WUEData	Water Use Efficiency Data

Acronym	Definition
WRD	Water Replenishment District of Southern California
WRMP	Water Resources Master Plan
WRP	water reclamation plant
WSCP	Water Shortage Contingency Plan

Executive Summary

E.S.1. Purpose of the Plan

The 2025 Regional Urban Water Management Plan (RUWMP or Plan) provides a long-range assessment of water supply reliability for the Three Valleys Municipal Water District (TVMWD) service area and its participating retail agencies through the year 2050. The Plan is prepared in accordance with the California Urban Water Management Planning Act and the 2025 UWMP Guidebook issued by the California Department of Water Resources (DWR) (DWR, 2026a). To satisfy the requirements of California Water Code Section 10630.5, this Executive Summary also serves as the statutory "Lay Description" of the Region's water supply reliability. The analytical framework, assumptions, and findings described in this lay description apply to all participating urban water suppliers included in this RUWMP. Individual UWMPs prepared as part of this regional effort rely on this description to satisfy the lay description requirement of the Urban Water Management Planning Act.

This RUWMP serves two primary purposes:

1. To clearly demonstrate that the Region has adequate and reliable water supplies to meet existing and projected future demands under normal conditions and during droughts; and
2. To provide a coordinated regional planning framework that improves consistency, reduces duplication, and strengthens individual UWMPs prepared by participating retail agencies.

By planning together at a regional scale, the agencies are better positioned to manage shared imported water systems and groundwater basins, respond to climate change, and maintain reliable water service for residents, businesses, and institutions.

E.S.2. Agencies Included in the RUWMP

This RUWMP was led by TVMWD in collaboration with seven retail water agencies (collectively referred to as the Participating Agencies):

- City of Glendora
- City of La Verne
- City of Pomona
- Golden State Water Company – Claremont System
- Golden State Water Company – San Dimas System
- Rowland Water District
- Walnut Valley Water District

In addition, the regional analysis incorporates water demand and supply estimates for other water agencies operating within the TVMWD service area. These include the Boy Scouts of America - Firestone Reservation, California Polytechnic University Pomona (Cal Poly Pomona), the City of Covina, Mt. San

Antonio College (Mt. SAC), Suburban Water Systems, and Valencia Heights Water Company. While these agencies prepared their own independent UWMPs, their water use affects shared regional supplies. Including them ensures that the regional water reliability analysis reflects total system conditions, rather than only participating agencies.

E.S.3. Regional Setting

The TVMWD service area (Region) covers approximately 133 square miles in southeastern Los Angeles County, extending from the foothills of the San Gabriel Mountains south to the Puente Hills and east toward the San Bernardino County line. The Region includes the Pomona Valley, Walnut Valley, and portions of the eastern San Gabriel Valley. The service area is predominantly urban with residential neighborhoods, commercial and industrial areas, educational institutions, and public facilities and is home to approximately 516,000 people as of the 2020 Census.

E.S.4. Population and Water Demand Projections

Population growth within the Region is expected to be modest through 2050, with most growth occurring through redevelopment and infill. Water demand projections account for anticipated population changes, employment trends, and land use patterns, as well as the effects of mandatory water conservation requirements.

Projected demands reflect ongoing and future reductions in per capita water use resulting from implementation of State mandated water use efficiency regulations, including the "Making Conservation a California Way of Life" requirements. These conservation measures are expected to partially offset demand increases associated with population growth and climate change.

E.S.5. Regional Water Supply Portfolio

The Region relies on a diversified water supply portfolio, which provides flexibility and resilience during dry conditions. Based on recent historical conditions (2021–2025), the regional water supply consists of:

- **Imported Water (~50%)**
  Water purchased from the Metropolitan Water District of Southern California (MWD), originating from the State Water Project (SWP) and the Colorado River, forms the backbone of the Region's supply. MWD's extensive surface and groundwater storage system provides a high level of drought reliability.
- **Local Groundwater (~44%)**
  Groundwater is produced from six basins: the Main San Gabriel Basin, Chino Basin, Six Basins, Spadra Basin, Central Basin, and Puente Basin. These basins are managed through court adjudications or Groundwater Sustainability Plans (GSPs) that protect long-term yields.
- **Recycled Water (~4%)**
  Several agencies use recycled water for non-potable purposes such as landscape irrigation, which reduces demand for potable supplies.

- **Local Surface Water (~2%)**
  Limited amounts of surface water are diverted from the San Gabriel River and San Antonio Creek, primarily during wet periods.

Together, these supplies support a robust conjunctive use strategy that includes storing imported water in local groundwater basins during wet years and withdrawing stored water during dry years.

E.S.6. Water Supply Reliability and Drought Planning

This RUWMP evaluates water supply reliability under multiple scenarios, including normal hydrologic conditions, a single dry year, and a five consecutive year drought. The analysis incorporates climate change considerations, including increased temperatures and changes in precipitation patterns.

The results of the reliability analysis demonstrate that sufficient supplies are projected to be available to meet regional water demands through 2050 under all evaluated scenarios. Short-term or localized reductions in groundwater or local surface water are assumed to be offset by imported water supplies from TVMWD and MWD, which are projected to remain fully reliable through the planning horizon. Regional groundwater storage, access to imported water supplies, and coordinated drought response planning provide the necessary flexibility to manage extended dry periods.

Each Participating Agency maintains its own Water Shortage Contingency Plan (WSCP), which outlines actions to be taken during water shortages and drought conditions.

E.S.7. Threats to Local Supply Reliability

While the Region's water portfolio is highly reliable under modeled scenarios, TVMWD and the Participating Agencies face operational threats that require proactive management. These threats primarily impact the physical ability to access and utilize local water supplies:

- **Climate Volatility**
  As identified in the Region's 2024 Climate Change Vulnerability Assessment, rising temperatures and shifting hydrologic patterns threaten both supply and demand. The Region is projected to experience shorter, flashier rainy seasons characterized by high-intensity storm events. This volatility poses a direct challenge to local spreading grounds, as heavy storm flows can exceed the immediate capture capacity of diversion facilities, resulting in lost groundwater recharge. Concurrently, hotter baseline temperatures are expected to drive up evapotranspiration and outdoor water demands.
- **Groundwater Quality and “Stranded Assets”**
  Decades of historical land-use practices have introduced contaminants – including Volatile Organic Compounds (VOCs), nitrates, and perchlorate – into the Region’s underlying aquifers. Furthermore, the Region faces a threat from moving regulatory targets, specifically the introduction of ultra-low Maximum Contaminant Levels (MCLs) for Per- and Polyfluoroalkyl Substances (PFAS). When wells exceed these strict new safety standards, they must be taken offline. These "stranded assets" temporarily eliminate local extraction capacity, forcing agencies to rely more heavily on imported water when the Region is working to reduce that dependence.

E.S.8. Planned Capital Projects

To proactively mitigate these climate and regulatory vulnerabilities, TVMWD and its Participating Agencies have identified a suite of collaborative water supply projects. These regional partnerships focus on optimizing existing infrastructure, remediating stranded groundwater assets, expanding conjunctive use, and maximizing the capture of local supplies. Key planned regional projects include:

- **Restoring Stranded Assets (GRIP+)**
  A major regional partnership between TVMWD, the City of Glendora, and the City of Pomona to install new extraction wells and advanced wellhead treatment systems. By treating contaminated groundwater, this project will restore local extraction capacity and produce approximately 9,200 acre-feet per year (AFY) of highly reliable local supply from the Main San Gabriel Basin.
- **Advanced Recycled Water Storage (Spadra Basin Optimization)**
  A collaborative initiative spearheaded by Walnut Valley Water District, the City of Pomona, and Cal Poly Pomona. This project proposes injecting advanced treated recycled water into the Spadra Basin via new injection wells, creating a drought-resilient local storage asset with a capacity of up to 3,500 acre-feet (AF).
- **Conjunctive Use Exchanges (Chino Basin)**
  Building upon existing successful dry-year yield programs, TVMWD and Pomona are evaluating an "in-lieu" exchange program. TVMWD would fund extraction and treatment upgrades in the Chino Basin in exchange for Pomona pumping and conveying an equivalent amount of local water to other TVMWD member agencies during droughts.
- **Stormwater Capture Enhancements**
  To address the shift toward shorter, higher-intensity winter storms, the Region is working with local flood control districts and protective associations to excavate deeper recharge basins (such as the San Antonio Spreading Grounds) and upgrade diversion structures. This will increase the instantaneous capture and storage volume of flash-flood runoff.
- **External Partnerships and Interties**
  The Region is actively pursuing new pipeline interties, such as a partnership through the Puente Basin Water Agency with the Covina Valley Water Company. This will allow the physical importation of up to 2,000 AFY of surplus local water eastward, directly offsetting reliance on imported water deliveries.

E.S.9. Water Conservation and Water Use Efficiency

Water conservation and water use efficiency are core components of the Region’s water management strategy. Retail agencies have implemented a wide range of conservation programs, including public education, rebate programs, landscape efficiency improvements, leak detection, and tiered water pricing.

All Participating Agencies previously met the State’s 2020 water conservation targets and continue to align with new efficiency standards established by State legislation and regulations. These efforts reduce long-term demand and improve overall system reliability.

E.S.10. Regional Coordination

This RUWMP was developed through a coordinated regional planning process involving TVMWD and Participating Agencies. Regional planning allows for consistent assumptions regarding shared water supplies, reduces duplication of effort, and strengthens the technical foundation of individual agency UWMPs.

Public participation was incorporated through notices, public meetings, and hearings conducted by the Participating Agencies prior to adoption of the Plan. TVMWD also conducted regional workshops with the stakeholders in the Region to provide an update on the development of the RUWMP.

E.S.11. Conclusion

This RUWMP demonstrates that the TVMWD region has adequate and reliable water supplies to meet projected demands through 2050, even under extended drought conditions. Long-term water demands are expected to decline due to conservation regulations, despite modest population growth.

Through continued use of diversified water supplies, conservation, regional coordination, and proactive planning, the Region is well positioned to adapt to future challenges, including climate change and regulatory requirements, while maintaining reliable water service for residents and businesses. Furthermore, continued investment in groundwater quality treatment is critical to protecting local water supplies. Regional coordination improves planning consistency and strengthens individual agency UWMPs.

E.S.12. Use of This Plan

This RUWMP serves as the regional technical foundation for each Participating Agency's individual Urban Water Management Plan (UWMP). Each agency adopts the portions of the Plan relevant to its service area while maintaining authority over local operations, conservation programs, and water shortage response actions.

Taken together, the Regional Context (**Part 1**) and Individual Agency UWMP chapters (Part 2) along with the Regional Supporting Information (**Part 3**) and Agency Supporting Information (Part 4) provide a comprehensive, coordinated strategy to ensure safe, reliable, and sustainable water service for the Three Valleys region.

1. Introduction

Three Valleys Municipal Water District (TVMWD) and its partnering agencies have long demonstrated a commitment to regional water resilience and sustainable resource management. As water supply reliability challenges continue to evolve across Southern California, TVMWD and its retail agencies recognize that water resources – specifically, imported water from the Metropolitan Water District of Southern California (MWD) and local groundwater basins – are regionally interdependent. To address these shared challenges and ensure consistent planning assumptions, TVMWD has led the development of this 2025 Regional Urban Water Management Plan (RUWMP or Plan) in collaboration with seven of its retail agencies.

The agencies participating in this 2025 RUWMP (Participating Agencies) include:

- Three Valleys Municipal Water District (Lead Agency)
- City of Glendora
- City of La Verne
- City of Pomona
- Golden State Water Company (GSWC) (Claremont System)
- GSWC (San Dimas System)
- Rowland Water District (Rowland WD)
- Walnut Valley Water District (WVWD)

In addition, there are two TVMWD retail agencies who have prepared independent 2025 UWMPs: the City of Covina and Suburban Water Systems. TVMWD has also coordinated with these agencies through development of this RUWMP and has incorporated their estimated supplies and demands into the regional analysis to provide a comprehensive analysis of regional water resources.

By coordinating as a Region[1], the Participating Agencies aim to reduce redundancy, improve consistency in supply and demand assumptions, and strengthen the technical foundation for each agency's individual planning efforts. This RUWMP presents a unified, regionally consistent analysis of water supply reliability, demand projections, and drought preparedness, providing a roadmap for the region to maintain reliable water service through 2050.

1.1. Background and Purpose

The California Water Code (CWC) requires urban water suppliers within the state to prepare and adopt Urban Water Management Plans (UWMPs) for submission to the California Department of Water Resources (DWR). The UWMPs, which are required to be filed every five years, must satisfy the requirements of the Urban Water Management Planning Act (UWMP Act) of 1983, including subsequent

[1] The Three Valleys Municipal Water District service area is referred to as the Region in the context of this RUWMP.

amendments. The UWMP Act requires urban water suppliers providing water for municipal purposes to more than 3,000 customers or supplying more than 3,000 acre-feet (AF) of water annually to prepare a UWMP.

A UWMP is intended to function as a long-term planning tool to guide broad-perspective decision-making by water suppliers. It is a general planning framework rather than an exact blueprint for supply and demand management. It generally answers a series of planning questions, including:

1. What are the potential sources of supply and what is the reasonable probable yield from them?
2. What is the probable demand, given a reasonable set of assumptions about growth and implementation of water use efficiency?
3. How well do supply and demand figures match up, assuming that the various probable supplies will be pursued?
4. How will the agency respond to drought conditions or water shortages?

This 2025 RUWMP satisfies all CWC requirements for the 2025 cycle, including updates to the UWMP Guidebook, published by DWR in December 2025; details regarding these updates are described in Chapter 1 of the DWR 2025 UWMP Guidebook (DWR, 2026a).

1.1.1. Regional Urban Water Management Plan

Water purveyors are permitted by DWR to work together to develop a cooperative regional UWMP. CWC Section 10620(d)(1) states: "An urban water supplier may satisfy the requirements of this part by participation in area wide, regional, watershed, or basin wide urban water management planning where those plans will reduce preparation costs and contribute to the achievement of conservation and efficient water use."

The purpose of jointly preparing this RUWMP is to facilitate a consistent evaluation of water sources common to the various agencies (specifically imported water from TVMWD and shared groundwater basins), to take advantage of group knowledge and experience, and to reduce preparation costs.

1.2. Plan Organization

This Plan is organized to meet the requirements of the UWMP Act for the eight Participating Agencies (TVMWD and seven retail agencies). Each Participating Agency has reviewed, adopted, and will implement the portions of this Plan relevant to their agency.

To streamline reporting and avoid redundant data entry, this Plan is organized into four distinct parts:

Part 1: Regional Context

Part 1 contains the information needed to meet the UWMP Act requirements that are common to all Participating Agencies. This section provides a comprehensive "roll-up" of the region’s water portfolio. It includes:

- Regional System Description: A description of the climate, demographics, and land use for the entire TVMWD service area.
- Water Sources: Detailed descriptions of the shared imported water supplies (from MWD) and the management of regional groundwater basins (Main San Gabriel, Chino, Six Basins, Spadra, Central, and Puente).
- Regional Reliability: An aggregation of supply and demand projections to assess water reliability for normal, single-dry, and five-year consecutive drought scenarios through 2050. Also includes a near-term stress test assessing the region's ability to meet demands during a drought over the next five years (2026–2030).

It should be noted that while the RUWMP is authored and adopted by the eight Participating Agencies listed above, the regional analysis in **Part 1** incorporates data from Other Member Agencies within the TVMWD service area (such as the City of Covina and Suburban Water Systems) to ensure the regional supply and demand assessment accurately reflects the total water use within the TVMWD service area.

Part 2: Individual Agency UWMPs

Part 2 includes a specific chapter for each of the Participating Agencies. Each chapter is supplemental to the regional information presented in **Part 1**. These chapters contain the agency-specific data required to meet the UWMP Act that cannot be reported regionally, including:

- Service area maps and climate characteristics.
- Descriptions of past and current water use.
- Future demand projection methodologies.
- Local water distribution system losses (water loss audit results).
- SB X7-7 and future water use objectives.
- Water supply entitlements or constraints unique to that retailer.
- Water Shortage Contingency Plan (WSCP) adoption and protocols.
- Demand management measures implemented by that retailer.
- RUWMP adoption.

Part 3: Regional Supporting Information

Part 3 includes all supporting documentation referenced in **Part 1** that is applicable to the region as a whole. This includes the DWR Regional UWMP Checklist (Appendix A), documentation of regional public notices and workshops, water supply agreements and legal documents, and the regional adoption resolution by the Lead Agency (TVMWD), which formally adopts both this Regional Context and TVMWD's specific wholesale UWMP components.

Part 4: Local Agency Supporting Information

Part 4 includes a set of supporting documentation for each retail Participating Agency, corresponding to their respective chapters in **Part 2**. Documents for each agency include:

- The DWR Retail UWMP Checklist verifying the agency has met UWMP Act requirements.
- Proof of agency-specific public hearing notices and adoption resolutions.
- The full text of the agency's WSCP.
- Completed DWR Submittal Tables specific to that agency.
- Water supply agreements specific to that agency.

Reporting Structure

This 2025 RUWMP utilizes a layered reporting approach to satisfy both regional and individual requirements. This structure ensures consistency across agency-specific chapters while maintaining the necessary granularity for individual agency compliance. Figure 1-1 illustrates the relationship between the Regional Context (**Part 1**) and the Local Agency UWMPs (**Part 2**). **Table 1-1** identifies the location of key UWMP data elements within this document.

Figure 1-1. Regional Context vs. Local Agency UWMPs Relationship

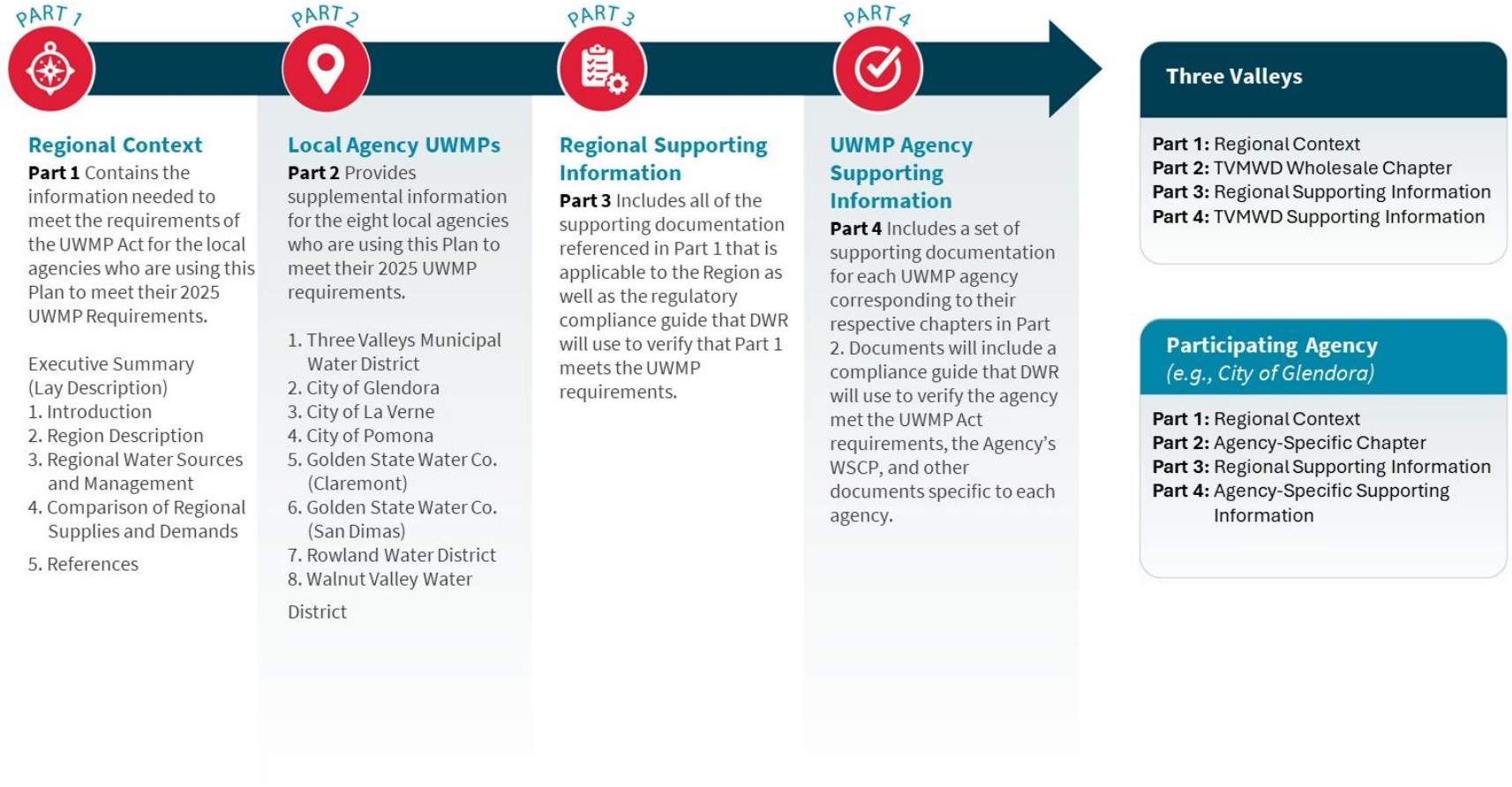


Table 1-1. Regional vs. Individual Reporting Matrix

UWMP Requirement	Part 1: Regional Context	Part 2: Individual Agency Chapters
System Description	Regional Climate and Demographics	Local Service Area Map and Customer Class Data
Water Use (Demand)	Aggregated Regional Demand Totals	Agency-Specific Demand Projections
SB X7-7 / AB 1668 Compliance	General Regional Trends	Specific Target Calculations and Compliance
Water Supply: Imported	MWD Reliability and Wholesale Allocation	Agency-Specific Purchase Projections
Water Supply: Groundwater	Basin Descriptions, Management, and Safe Yield	Agency-Specific Pumping Rights and History
Water Supply: Recycled	Regional Infrastructure and Opportunities	Agency-Specific Use and Projection
Water Supply Reliability	Regional Water Budget (Surplus/Deficit)	Agency-Specific Reliability Tables
Drought Risk Assessment (DRA)	Regional 5-Year Stress Test (2026-2030)	Agency-Specific 5-Year Stress Test
Water Shortage Contingency Plan	Regional Summary and Consistency	Full Agency WSCP Adoption and Protocols
Demand Management Measures	Regional Conservation Programs (TVMWD)	Local Conservation Programs
Adoption and Submittal	Regional Resolution (TVMWD)	Individual Resolutions (Retailers)

By utilizing this structure, the Participating Agencies ensure that the "Regional Context" serves as the substantiated technical foundation for the "Individual Agency UWMPs," resulting in a cohesive and defensible regional planning document.

1.3. Plan Preparation and Coordination

Management of water resources in the Three Valleys region takes place within a complex legal and institutional framework. Development of this RUWMP required comprehensive coordination involving the cooperation of many parties engaged in water management. TVMWD solicited public involvement in the planning process by presenting updates at scheduled workshops and Board meetings, as well as soliciting public comments on the draft RUWMP.

The successful development of this 2025 RUWMP required strong coordination between TVMWD, MWD, and its retail agencies. The planning process was structured to ensure clear communication, foster collaboration, and maintain transparency between all agencies and broader stakeholders.

1.3.1. Participating Agencies

The agencies participating in the development and adoption of this RUWMP are listed in Section 1 (Introduction). These eight agencies (TVMWD and seven retail agencies) actively collaborated to develop

the demand and supply projections, assess regional drought risk, and align water shortage communication protocols where feasible (though each agency retains its own independent WSCP).

In addition to the Participating Agencies, this RUWMP incorporates data from "Other Member Agencies" within the TVMWD service area. While these agencies are not co-authors or signatories to this specific RUWMP, their water demands draw from the same regional aqueducts and groundwater aquifers as the Participating Agencies; collectively, these agencies represent a significant portion of the region's total water demand. To accurately project whether the region can meet its needs through 2050, projections for these agencies were estimated based on publicly available data (such as Master Plans and previous UWMPs) and data provided to TVMWD as part of regular reporting and was incorporated into the regional analysis in **Part 1**.

These Other Member Agencies include:

- Boy Scouts of America - Firestone Reservation / City of Industry
- California Polytechnic University, Pomona
- City of Covina
- Mt. San Antonio College
- Suburban Water Systems
- Covina Valley Water Company

Among the Other Member Agencies, the City of Covina and Suburban Water Systems have prepared independent 2025 UWMPs, as mentioned in the Introduction.

1.3.2. Public Participation

The Participating Agencies encouraged public participation in the preparation of this Plan to ensure the public's comments were considered in decisions about water management in the region. In accordance with the UWMP Act, the Participating Agencies issued a Notice of Plan Preparation to cities and counties within the region at least 60 days prior to the public hearing (notices distributed between March 13 and March 27, 2026). This notice informed stakeholders that the 2025 RUWMP was being prepared and invited input. **Table 1-2** identifies the stakeholders notified of the 2025 RUWMP preparation.

Copies of these 60-day Notice of Preparation letters and the associated distribution lists are included in each Participating Agency's Public Outreach appendix (**Appendix [X]-2**) in **Part 4**.

Prior to adoption, each Participating Agency provided notice to the public through its website and published announcements of the public hearing in a local newspaper once per week for two consecutive weeks. Copies of the proofs of publication for these public hearings are included in each Participating Agency's Public Outreach appendix (**Appendix [X]-2**) in **Part 4**.

Table 1-2. Stakeholders Notified of the Preparation of the 2025 RUWMP (60-Day Notice)

Agency/City/County	Three Valleys Municipal Water District	City of Glendora	City of La Verne	City of Pomona	GSWC - Claremont	GSWC - San Dimas	Rowland Water District	Walnut Valley Water District
Building Industry Association	n/a	n/a	n/a	n/a	n/a	n/a	✓	n/a
Cal Poly Pomona	✓	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Chino Basin Watermaster	✓	n/a	n/a	✓	n/a	n/a	n/a	n/a
City of Azusa	✓	✓	n/a	n/a	n/a	n/a	n/a	n/a
City of Claremont	✓	n/a	✓	✓	✓	n/a	n/a	n/a
City of Covina	✓	✓	n/a	n/a	n/a	✓	n/a	n/a
City of Diamond Bar	✓	n/a	n/a	n/a	n/a	n/a	✓	✓
City of Glendora	✓	✓	n/a	n/a	n/a	✓	n/a	n/a
City of Industry	✓	n/a	n/a	n/a	n/a	n/a	✓	✓
City of La Habra	n/a	n/a	n/a	n/a	n/a	n/a	✓	n/a
City of La Puente	✓	n/a	n/a	n/a	n/a	n/a	✓	n/a
City of La Verne	✓	n/a	n/a	n/a	n/a	✓	n/a	n/a
City of Montclair	n/a	n/a	n/a	n/a	✓	n/a	n/a	n/a
City of Pomona	✓	n/a	✓	✓	✓	n/a	✓	n/a
City of San Dimas	n/a	n/a	✓	n/a	n/a	✓	n/a	n/a
City of Upland	n/a	n/a	n/a	✓	✓	n/a	n/a	n/a
City of Walnut	✓	n/a	n/a	n/a	n/a	✓	✓	✓
City of West Covina	n/a	n/a	n/a	n/a	n/a	n/a	✓	✓
City of Whittier	n/a	n/a	n/a	n/a	n/a	n/a	✓	n/a
Covina Valley Water Company	✓	✓	n/a	n/a	n/a	n/a	✓	n/a
Golden State Water Co.	✓	✓	✓	✓	n/a	n/a	n/a	n/a
Hacienda La Puente Unified School District	n/a	n/a	n/a	n/a	n/a	n/a	✓	n/a
Inland Empire Utilities Agency	✓	n/a	n/a	n/a	n/a	n/a		n/a

Agency/City/County	Three Valleys Municipal Water District	City of Glendora	City of La Verne	City of Pomona	GSWC - Claremont	GSWC - San Dimas	Rowland Water District	Walnut Valley Water District
La Habra Heights County Water District	n/a	n/a	n/a	n/a	n/a	n/a	✓	n/a
La Puente Valley County Water District	n/a	n/a	n/a	n/a	n/a	n/a	✓	n/a
Los Angeles County	✓	✓	✓	✓	✓	✓	✓	✓
Main San Gabriel Basin Watermaster	✓	✓	n/a	n/a	n/a	n/a	n/a	n/a
Metropolitan Water District	✓	n/a	n/a	✓	n/a	n/a	n/a	n/a
Mt. San Antonio College	✓	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Pico Water District	n/a	n/a	n/a	n/a	n/a	n/a	✓	n/a
Rowland Unified School District	n/a	n/a	n/a	n/a	n/a	n/a	✓	n/a
Rowland Water District	✓	n/a	n/a	✓	n/a	n/a	n/a	✓
Six Basins Watermaster	✓	n/a	n/a	✓	n/a	n/a	n/a	n/a
Suburban Water Systems	✓	✓	n/a	n/a	n/a	n/a	n/a	n/a
Sycamore Development Partners	n/a	n/a	n/a	n/a	n/a	n/a	✓	n/a
Three Valleys Municipal Water District	n/a	✓	✓	✓	n/a	n/a	✓	✓
Upper San Gabriel Valley Municipal Water District	✓	✓	n/a	n/a	n/a	n/a	n/a	n/a
Valley County Water District	n/a	n/a	n/a	n/a	n/a	n/a	✓	n/a
Walnut Valley Water District	✓	n/a	n/a	✓	n/a	n/a	✓	n/a
Yorba Linda Water District	n/a	n/a	n/a	n/a	n/a	n/a	✓	n/a

Note: n/a = not applicable.

1.3.3. Stakeholder Workshops

Participating Agencies collaborated in the development of the Plan through a series of individual meetings and regional workshops to update elements of the Plan and review and provide feedback on preliminary results.

Individual Agency Data Collection

The data collection effort began with individual meetings between TVMWD planning staff and each of the seven retail Participating Agencies. These meetings were aimed at gathering granular data – including production numbers, consumption logs, and water loss audits – from the previous five fiscal years (FYs) 2021-2025). Following the initial data analysis, follow-up meetings were held with each agency to "ground-truth" their draft demand and supply projections. This iterative process allowed each agency to verify that their draft projections accurately reflected their specific portfolios, development plans, and operational constraints.

Regional Workshops

TVMWD hosted two regional workshops to facilitate data sharing and consensus among the agencies.

- Workshop 1 (January 29, 2026): The first workshop brought together Participating Agencies and other non-participating agencies to review the 2025 RUWMP structure, confirm the regional supply and demand projections, and review the results of the DRA. The meeting agenda, sign-in sheets, and presentation materials for this workshop are included in **Part 3, Appendix E**.
- Workshop 2 (April 2, 2026): A second workshop was held to review the Draft RUWMP and individual agency chapters prior to public release. This workshop focused on ensuring consistency across the agency-specific chapters (**Part 2**) and the regional roll-up (**Part 1**). The meeting agenda, sign-in sheets, and presentation materials for this workshop are included in **Part 3, Appendix E**.

1.4. Plan Adoption

The CWC requires that the UWMP be adopted by the governing body of each Participating Agency. Before the Plan could be adopted, the agencies were required to notify the public and hold a public hearing to encourage community input.

Adoption Strategy (Part 1 vs. Part 2)

To ensure that each Participating Agency meets its individual regulatory obligations while benefiting from a coordinated regional approach, this RUWMP was structured to allow agencies to adopt the specific components relevant to their service area.

- Three Valleys Municipal Water District (Lead Agency): Adopted **Part 1 (Regional Context)**, **Part 3 (Regional Supporting Information)**, and its specific wholesale agency chapter in **Part 2**.

- Retail Participating Agencies: Adopted **Part 1**, **Part 3**, and their respective individual agency chapter in **Part 2** and local appendices in **Part 4**.

This structure ensures that the "Regional Context" (**Part 1**) serves as a common foundation for the Participating Agencies, while the "Individual Agency UWMPs" (**Part 2**) remain the specific responsibility of each local governing body.

Public Hearing and Resolution

Following the public noticing period described in **Section 1.3**, each Participating Agency held a public hearing to discuss the 2025 RUWMP and the WSCP. The hearings provided an opportunity for the public to comment on the agencies' water management strategies.

Following the public hearing, each agency's governing body adopted the 2025 RUWMP and the 2025 WSCP via resolution. **Table 1-3** summarizes the adoption dates and resolution numbers for each Participating Agency. Copies of the signed resolutions are included in **Part 3, Appendix F** (for the TVMWD Lead Agency resolution) and **Part 4**.

Table 1-3. Participating Agency RUWMP Adoption Dates and Resolutions

Agency	Public Hearing and Adoption Meeting
TVMWD	June 3, 2026
City of Glendora	May 26, 2026
City of La Verne	May 18, 2026
City of Pomona	May 18, 2026
GSWC (Claremont)	May 26, 2026
GSWC (San Dimas)	May 26, 2026
Rowland Water District	May 19, 2026
Walnut Valley Water District	May 18, 2026

Plan Submittal

In accordance with the UWMP Act, the Final 2025 RUWMP and WSCPs were submitted to DWR within 30 days of adoption and by the statutory deadline of July 1, 2026. The submittal was completed electronically using the DWR Water Use Efficiency Data (WUEdata) online portal.

Additionally, copies of the adopted Plan were submitted to the California State Library and the cities and counties within the region within 30 days of adoption. Transmittal receipts and letters are provided in **Part 3, Appendix G**.

Amending the Plan

If the adopted 2025 RUWMP or WSCP requires amendment in the future, the agency proposing the amendment will follow the same procedures for notification, public hearing, adoption, and submittal as were used for the original Plan, in accordance with the CWC.

2. Region Description

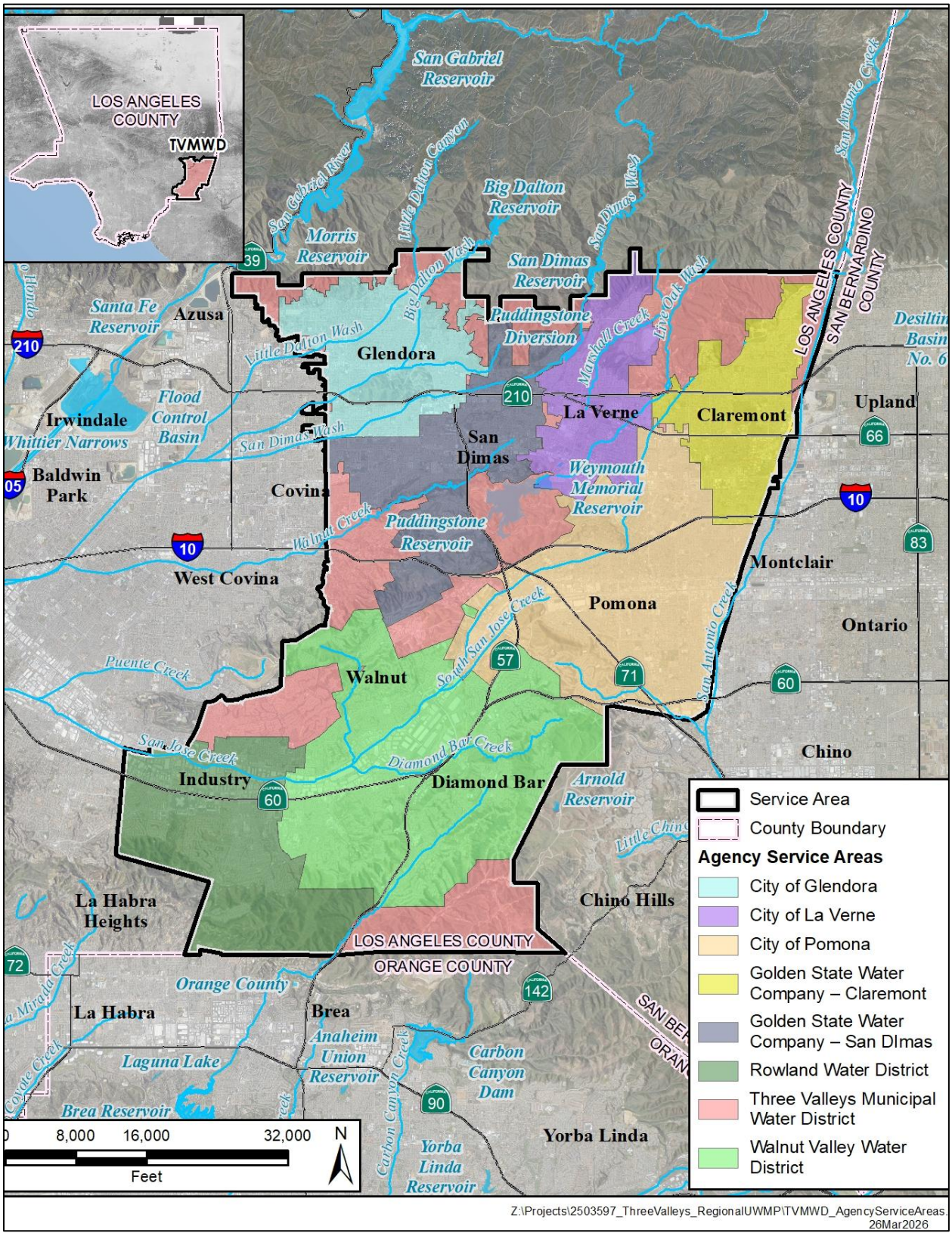
The Three Valleys Municipal Water District service area (Region) is located in the southeastern portion of Los Angeles County and covers a diverse landscape ranging from the foothills of the San Gabriel Mountains to the urbanized valley floors. This chapter describes the Region's characteristics, including its physical setting, population demographics, land use, and regional climate.

This chapter also identifies the local agencies and water suppliers that have a role in managing water resources within the Region. These agencies work collaboratively to manage a complex portfolio of imported water, local groundwater, and local surface water to support a thriving regional economy and population. A detailed discussion of the water resources managed within the Region is provided in Chapter 3 (Regional Water Sources and Management).

2.1. Regional Setting

The Region is defined by the service area of TVMWD, which encompasses approximately 133 square miles. The Region derives its name from the three primary valleys that make up its service area: the Pomona Valley, the Walnut Valley, and the eastern portion of the San Gabriel Valley. **Figure 2-1** summarizes this Region and its surrounding area.

Figure 2-1. Map of TVMWD Service Area



Geographically, the Region is bordered by the San Gabriel Mountains to the north, which provide a critical watershed for local surface flows and spreading grounds. To the east, the Region is bounded by the San Bernardino County line; to the south, by the Puente Hills and Orange County line; and to the west, by the San Gabriel River and the main San Gabriel Valley urbanized corridor.

The topography of the Region varies significantly, ranging from rugged foothill terrain in the north (Claremont, Glendora, La Verne) to the gently sloping valley floors where the majority of the residential and commercial development is located. This variation in terrain influences the Region's water management strategies, particularly regarding groundwater recharge capability and pressure zone management for water distribution.

The Region is a highly urbanized to semi-urbanized area that serves as a transition zone between the greater Los Angeles metropolitan area and the Inland Empire. It is traversed by major transportation corridors, including Interstates 10 and 210 and State Route 57, which have historically driven population growth and economic development in the area. Despite its urbanization, the Region maintains significant connection to natural resources, particularly along the northern foothill interface, which also presents specific climate vulnerabilities such as wildfire risk.

2.2. Water Agencies in the Region

Management of the Region's water resources involves a hierarchy of water suppliers, including a regional wholesaler and multiple retail agencies. TVMWD acts as the regional wholesaler, bridging the gap between the imported water supplies from MWD – a regional wholesale cooperative responsible for importing and managing Colorado River and State Water Project (SWP) supplies for Southern California – and the retail agencies that serve residents and businesses. The retail agencies include municipalities, special districts, investor-owned utilities, and mutual water companies, each responsible for the direct management of water supply distribution, local groundwater extraction, and customer service.

2.2.1. Water Supply Managers, Wholesalers, and Retailers

TVMWD is a public agency formed by election of voters in 1950. As a member agency of MWD, TVMWD is the primary wholesale water supplier for the Region. TVMWD is responsible for long-range regional water supply management, including the importation of supplemental water from the SWP and the Colorado River Aqueduct (CRA) via MWD. TVMWD manages the transmission pipelines and treatment facilities necessary to deliver this imported water to its member agencies. Additionally, TVMWD plays a critical role in regional groundwater management by coordinating connection to MWD's replenishment programs for the Main San Gabriel, Chino, and Six Basins.

Regional Water Agencies

There are 13 retail water agencies and/or community water systems operating within the TVMWD service area. These agencies vary in size and governance structure, but all rely on the common regional resources managed in this Plan.

For the purposes of this 2025 RUWMP, the retail agencies are categorized into two groups:

1. Participating Agencies: Seven retail agencies actively participated in the development of this Plan. Detailed descriptions of their specific service areas, water use, and supply reliability are provided in their respective chapters in **Part 2** of this Plan.
2. Other Member Agencies: Six additional agencies operate within the Region. While these agencies are not signatories to this specific RUWMP, their water demands represent a significant portion of the regional total. Therefore, their supply and demand data has been estimated and included in the Regional Context (**Part 1**) analysis to ensure an accurate assessment of total regional reliability.

Table 2-1 summarizes the water agencies within the Region.

Table 2-1. Water Management Agencies in the TVMWD Region

Agency Name	Agency Type	RUWMP Status
Three Valleys Municipal Water District	Special District (Wholesaler)	Lead Agency
City of Glendora	Municipality	Participating Agency
City of La Verne	Municipality	Participating Agency
City of Pomona	Municipality	Participating Agency
Golden State Water Co. (Claremont)	Investor-Owned Utility	Participating Agency
Golden State Water Co. (San Dimas)	Investor-Owned Utility	Participating Agency
Rowland Water District	Special District	Participating Agency
Walnut Valley Water District	Special District	Participating Agency
City of Covina	Municipality	Other Member Agency
Suburban Water Systems	Investor-Owned Utility	Other Member Agency
Covina Valley Water Company Retail (Formally Valencia Heights Water Company)	Mutual Water Company	Other Member Agency
Cal Poly Pomona	State University	Other Member Agency
Mt. San Antonio College	Community College	Other Member Agency
Boy Scouts (Firestone Reservation)	Non-Profit/Institutional	Other Member Agency

2.3. Population and Demographics

Understanding the demographic makeup and growth trajectory of the TVMWD service area is essential for accurately projecting future water demands, designing effective conservation programs, and developing equitable long-term water management strategies. While the Region experienced periods of rapid residential and commercial expansion throughout the late 20th century, recent demographic data indicates a transition toward stabilized, modest population growth driven primarily by urban infill and redevelopment.

2.3.1. Historic Population Growth

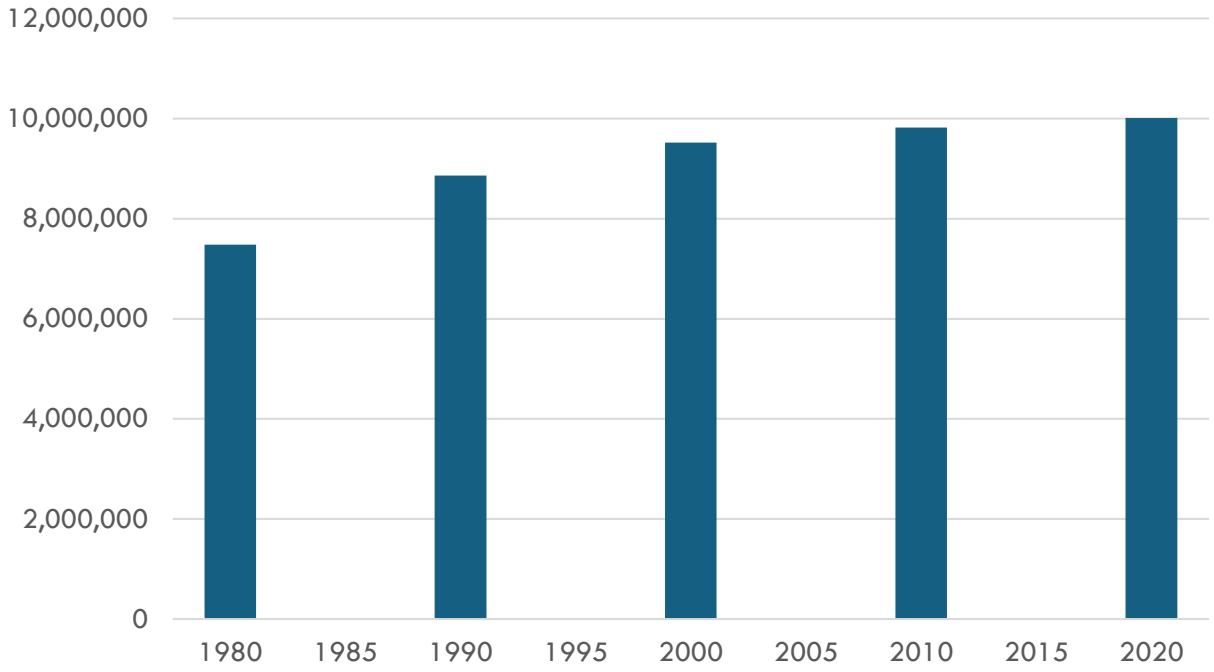
The Region covers the eastern part of Los Angeles County, as well as the eastern half of the San Gabriel Valley. Because of the San Gabriel Valley's close relationship with the economy and job market of the general Los Angeles region, economic trends that affect housing demands and job growth in Los Angeles

can be generally applied to San Gabriel Valley and the TVMWD service area. Historic U.S. Census population values and average annual growth rates for Los Angeles County are shown in **Table 2-2.** and **Figure 2-2**. Between 1980 and 2000, Los Angeles County grew rapidly, adding nearly 140,000 people each year from 1980 to 1990. By 2000, growth slowed and has been flattening out, gaining only 20,000 people per year from 2010 to 2020. Going forward, the population of Los Angeles County is projected to decline through 2050, as discussed in the following section.

Table 2-2. Los Angeles County Population, 1980 to 2020

Los Angeles County Population	1980	1990	2000	2010	2020
Population	7,477,239	8,863,052	9,519,315	9,818,605	10,014,009
Average Annual % Increase		1.71%	0.72%	0.31%	0.20%
Annual Average Population Increase, people per year		139,000	66,000	30,000	20,000

Figure 2-2. Los Angeles County Population, 1980 to 2020



U.S. Census data indicate the TVMWD service area has experienced somewhat slower population growth than the greater Los Angeles County area. The Census populations for the TVMWD service area and annual average growth rates are shown in **Table 2-3**.

Table 2-3. TVMWD Population, 1990 to 2020

TVMWD Population	1990	2000	2010	2020
Population	474,112	508,711	506,446	515,688
Average Annual % Increase		0.71%	(0.04%)	0.18%
Annual Average Population Increase, people per year		3,460	230	920

2.3.2. Future Population Projections

According to the California Department of Finance projections, the population of Los Angeles County is projected to decline from 2025 to 2050, as shown in **Table 2-4** (DOF, 2025).

Table 2-4. Los Angeles County Projected Population, 2025 to 2050

Projected Population	2025	2030	2035	2040	2045	2050
Population	9,853,842	9,867,515	9,840,458	9,775,762	9,684,285	9,554,157
Average Annual % Increase	(0.32%)	0.03%	(0.05%)	(0.13%)	(0.19%)	(0.27%)
Annual Average Population Change, people per year	(32,000)	3,000	(5,000)	(13,000)	(18,000)	(26,000)

To project population for the TVMWD service area, the Southern California Association of Governments (SCAG) demographics and growth forecast for the 2024 Connect SoCal Regional Transportation Plan (RTP) were used (SCAG, 2024). These projections include estimated population, households, and employment in 2019, 2035, and 2050 inside each of the approximately 13,062 traffic analysis zones (TAZs) that cover the SCAG region. SCAG publishes data per jurisdiction and TAZ as GIS shapefiles. This data is intersected with supplier service areas to provide an estimate of population within service areas for 2019, 2035, and 2050. SCAG prepares demographic forecasts based on land use data for their region and outside sources such as the 2020 Census and Regional Housing Needs Assessment (RHNA). SCAG incorporates essential land use planning information to reflect anticipated future populations and land uses.

In 2022, SCAG launched the Local Data Exchange (LDX), a tool where jurisdictions can directly input their data. This change has increased data input, participation, and validation for the 2019, 2035, and 2050 projections. SCAG's projections undergo extensive local review, incorporating zoning information from city and county general plans, input from local planners and jurisdictions, and coordination with local or regional land use authorities.

SCAG's 2024 population growth projections have declined from the last Connect SoCal RTP in 2020, due to ongoing economic impacts of COVID-19, pandemic-related death increases, increasingly negative net domestic migration, decline in births, and near-zero level of foreign immigration. SCAG's 2024 update uses a 2019 base year and incorporates a broader data range from 2016 to 2022, capturing key post-COVID shifts in population, employment, and household trends.

Figure 2-3 Table 2-5 provides a comparison of population projections from the 2020 and 2024 Connect SoCal RTP. While 2024 SCAG projects slower growth, the result still shows a minor increase in population within the TVMWD service area, which is estimated to grow by about 30,000 people by 2050 from a 2020 Census value of 515,688. **Table 2-5** shows 2024 Connect SoCal RTP projections along with a percent growth rate from 2030 to 2050. **Table 2-6.** and **Table 2-7** show SCAG projections of households and employment (jobs) for the TVMWD service area, respectively. Near-term employment trends are discussed in more detail in the next section.

Table 2-5. Projected Population for the Region (2030 to 2050)

Projected Population	2030	2035	2040	2045	2050
Total	532,566	538,918	541,174	543,431	545,688
% Growth Rate		0.24%	0.08%	0.08%	0.08%

Figure 2-3. Connect SoCal RTP Population Projection Comparison

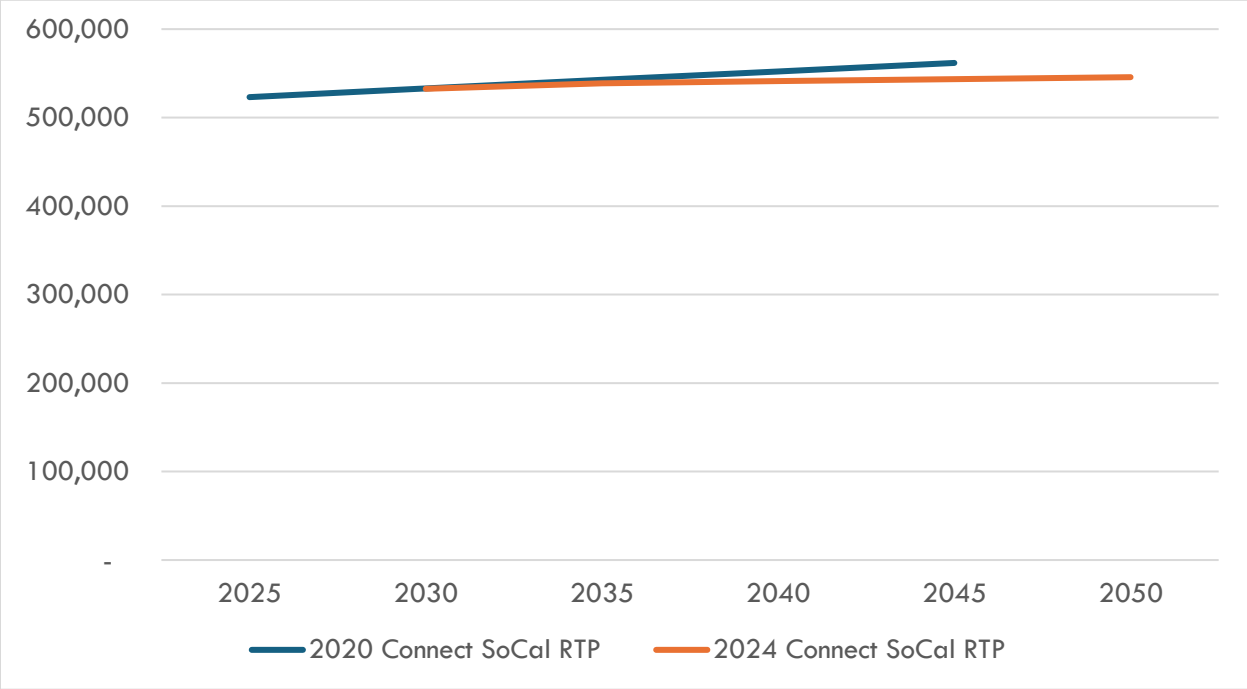


Table 2-6. Projected Household for the TVMWD Service Area (2019 to 2050)

Projected Households	2019	2035	2050
Total	159,913	183,170	188,818
% Growth Rate		0.85%	0.19%

Table 2-7. Projected Employment for the TVMWD Service Area (2019 to 2050)

Projected Jobs	2019	2035	2050
Total	233,679	243,785	245,538
% Growth Rate		0.26%	0.04%

2.3.3. Other Demographic Information

The Region comprises about half of the San Gabriel Valley, on the eastern portion of the Los Angeles County as described in **Section 2.3.1**. Economic conditions in the Region can be reflected by the 2025 San Gabriel Valley Economic Forecast prepared by the San Gabriel Valley Economic Partnership and Cal Poly Pomona (SGVEP & Cal Poly Pomona, 2025). Overall, the Region has been experiencing a slowdown in economic growth for 2025, due to the effects of the COVID-19 pandemic. Like most communities in Southern California, the post-pandemic recovery period is still present today.

Currently, the San Gabriel Valley is experiencing long-term economic impacts from wildfires, such as displacement of residents, business disruption, and rebuilding costs. The San Gabriel Valley was affected by multiple wildfires in January of 2025, burning over 38,000 acres of Los Angeles County. A high demand of housing and rental increases have left residents to be displaced or migrate out of the San Gabriel Valley. The forecast indicates that most rebuilding activity is expected to occur over multiple years rather than in the near term. The San Gabriel Valley is expected to continue experiencing the economic effects of the wildfires over the coming years.

In developing the economic forecast, the San Gabriel Valley considered three major factors observed over the past year: wildfires, tariffs, and federal layoffs. Without these factors, total nonfarm employment was expected to grow steadily by approximately 0.4 percent, with job gains concentrated in the healthcare, transportation, and warehousing sectors. When these impacts are incorporated, however, 2025 is projected to result in a loss of approximately 6,500 nonfarm jobs, representing a 0.9 percent decline across the San Gabriel Valley. Manufacturing has been the sector most affected, with an estimated 2,900 jobs lost, accounting for roughly 5.7 percent of the sector's workforce. Looking ahead, total nonfarm employment is projected to rebound by approximately 4,800 jobs (0.7 percent) by 2027, relative to 2025 levels.

Disadvantaged Communities

In accordance with DWR guidance, a community is classified as a disadvantaged community (DAC) if its median household income is below 80 percent of the statewide Median Household Income (MHI) for California. The current dataset used by DWR in the DAC Mapping Tool is the U.S. Census American Community Survey 5-Year data for the 2018–2023 period (U.S. Census Bureau, 2024). Based on this dataset, the statewide MHI is $63,783, resulting in a DAC income threshold of $77,067.

A substantial number of census tracts within the Region are identified as DACs. The largest concentration of DACs is located in the eastern portion of the Region in the City of Pomona to the western portion in the Cities of Walnut and Rowland Heights, with additional DAC areas present in portions of the City of La Verne. Smaller, dispersed DAC areas are also located throughout the Region.

Many DAC residents within the Region are served by public water systems and receive water supplies that meet all applicable state and federal drinking water quality standards from the water agencies serving their communities. While water quality standards are met, affordability remains a challenge in some DAC areas. Communities with the highest concentrations of DAC residents have implemented assistance programs to help households manage water-related costs while continuing to ensure that water and wastewater services comply with all state and federal regulatory requirements.

2.4. Land Uses

Land use patterns within the Region are a primary driver of water demand, particularly regarding outdoor irrigation needs. As described in **Section 2.1**, the Region covers approximately 133 square miles characterized by a diverse mix of developed urban landscapes and natural foothill terrain.

The valley floors (Pomona, Walnut, and San Gabriel Valleys) are largely built-out and urbanized. The predominant land use in these areas is residential, consisting of a mix of low-density single-family homes (which historically drive higher per capita water use due to landscaping) and medium-to-high density multi-family developments. Current land use trends focus on redevelopment, "in-fill" projects, and densification (such as the addition of Accessory Dwelling Units). The northern boundary of the Region, defined by the foothills of the San Gabriel Mountains, remains largely comprised of protected open space and low-density residential interface zones. The Region also supports significant commercial and light industrial corridors, particularly along Interstates 10 and 210 and State Route 57.

A unique characteristic of the Region is the presence of major institutional land uses. The area is home to several large educational institutions, including California State Polytechnic University, Pomona (Cal Poly Pomona), Mt. San Antonio College (Mt. SAC), and the Claremont Colleges. These campuses represent distinct water use profiles, often managing large, landscaped areas, independent water infrastructure systems, and substantial demand shifts that correspond with instructional sessions and breaks.

Planning Coordination

While TVMWD and its Participating Agencies manage water supplies, most of them do not have land use authority. The authority to approve General Plans, Specific Plans, and zoning designations lies with the local municipalities (e.g., City of Pomona, City of Glendora) and Los Angeles County.

However, the California Government Code requires coordination between land use and water planning. The Participating Agencies generally voluntarily comply with local building codes and standards. Furthermore, the demand projections utilized in this Plan (and discussed in **Section 4**) rely on growth forecasts from the SCAG, which are derived from the local land use plans of the cities and counties within the Region (SCAG, 2024). SCAG conducts coordination with land use agencies as part of its regional forecast cycles. **Figure 2-4** and **Table 2-8** show the land uses within the Three Valley Region.

Figure 2-4. Regional Land Use Map

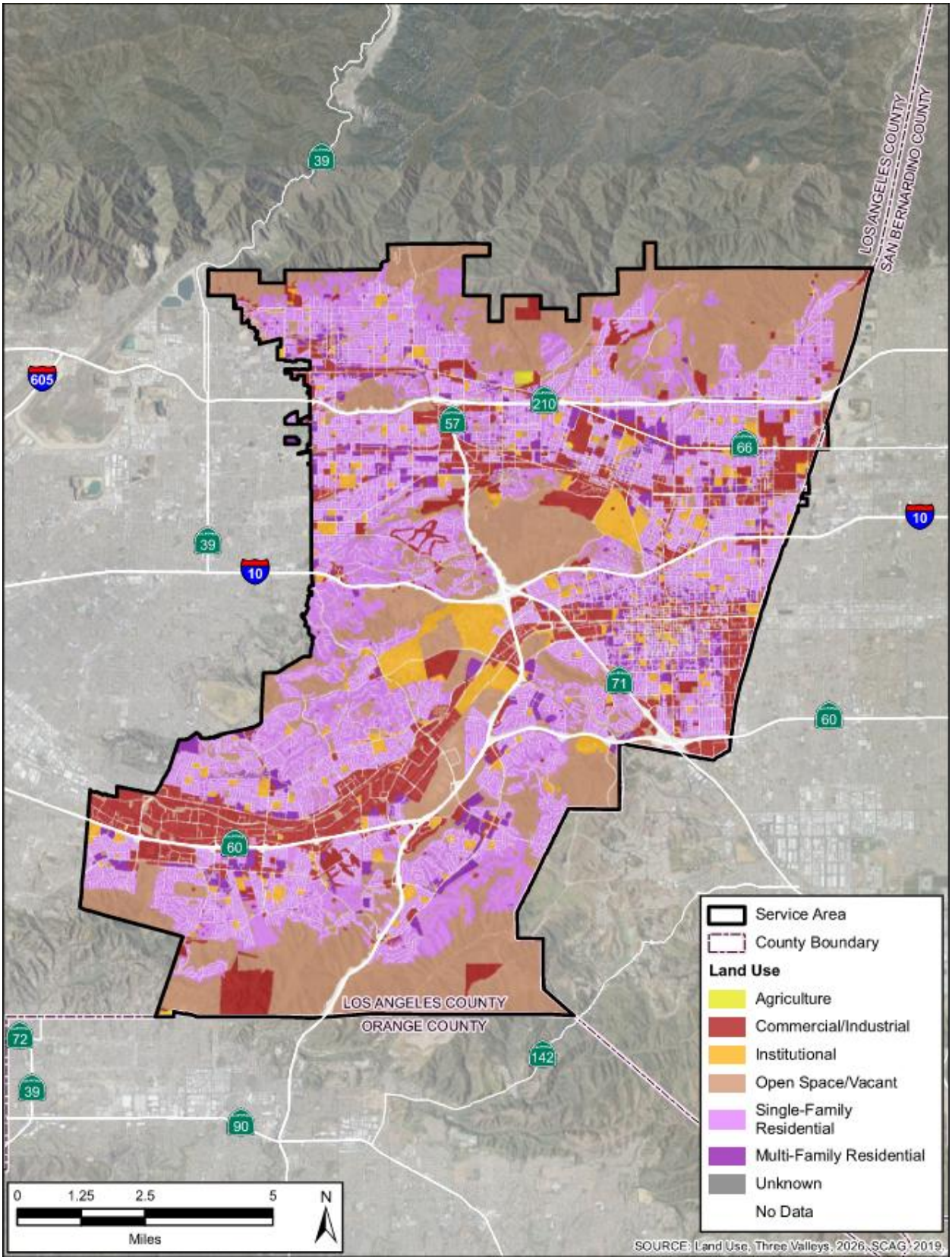


Table 2-8. Approximate Regional Land Use Distribution

Land Use Category	Description	Approximate % of Service Area
Single-Family Residential	Detached homes, typically with outdoor landscaping	38%
Multi-Family Residential	Apartments, condos, townhomes	5%
Commercial / Industrial	Retail, office parks, manufacturing, logistics	16%
Institutional	Schools, universities, hospitals, government facilities	6%
Open Space / Vacant	Foothills, parks, spreading grounds, undeveloped land	35%
Agriculture	Remnant agricultural parcels (e.g., Cal Poly campus)	<1%

2.5. Regional Climate

The climate within the Region is characterized as "Mediterranean," consisting of hot, dry summers and mild, wet winters. This seasonal pattern is the primary driver of the Region's water demand profile: water use typically peaks in the summer months (July through September) due to high outdoor irrigation demands and drops in the winter months (December through March) when rainfall is more prevalent and evaporation rates are lower.

The Region's local hydrology is heavily influenced by the San Gabriel Mountains to the north. These mountains act as a barrier to storm systems, creating an orographic effect that results in higher precipitation totals in the foothills compared to the valley floor. Surface water supplies from the San Gabriel River and San Antonio Creek account for approximately 2 percent of the Region's water supply portfolio and are directly dependent on this mountain precipitation and snowpack. Recycled water, which is largely independent of local precipitation, accounts for an additional 4 percent of the regional supply.

2.5.1. Current Regional Climate

The Region has extensive historical climate records used for planning. For evaluating historical hydrologic extremes and long-term variability, the Glendora West Station gauge serves as a key benchmark, with records dating back to 1883[2]. Historical analysis of this station indicates significant variability in the Region, with annual rainfall ranging from a low of 7.67 inches (1961) to a high of 46.55 inches (1978).

While the Glendora West Station provides an excellent centennial record for precipitation, it does not capture the full suite of climatological data necessary for modern demand modeling. Therefore, to establish the current baseline for average monthly temperatures, precipitation, and reference evapotranspiration (ETo), the Region utilizes data from the California Irrigation Management Information System (CIMIS) Station 78, located in Pomona (DWR, 2026b). **Table 2-9** summarizes these baseline climate characteristics for the Region for the last 35 years (1990-2025). This specific timeframe

[2] https://wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca7050

was selected because it represents the full period of continuous, reliable data available for CIMIS Station 78.

Table 2-9. Regional Climate Characteristics (Jul 1990 – Sep 2025)

Month	Average Temperature (°F)	Average Minimum Temperature (°F)	Average Maximum Temperature (°F)	Average Total Precipitation (Inches)	ETo (Inches)
January	53.6	42.3	67.3	3.1	1.99
February	54.3	43.0	67.2	3.4	2.37
March	56.7	45.1	69.7	2.3	3.73
April	59.7	47.4	73.1	1.0	4.74
May	63.3	52.4	76.0	0.4	5.20
June	68.2	56.8	82.0	0.2	5.96
July	73.0	60.7	87.8	0.2	6.74
August	74.0	60.9	89.7	0.3	6.59
September	71.5	58.9	87.0	0.5	4.99
October	65.3	53.1	80.3	0.8	1.94
November	58.2	46.0	73.4	1.1	2.39
December	52.5	41.3	66.7	2.5	1.77
Annual	62.5	50.6	76.7	15.9	48.41

Source: California Department of Water Resources, CIMIS Station 78 (Pomona) (DWR, 2026b)

As shown in the table, the Region's climate creates a significant structural imbalance between natural water supply and outdoor water demand. Annual ETo (48.41 inches) is more than three times the average annual precipitation (15.9 inches). This significant deficit necessitates the application of supplemental irrigation to maintain landscaping and agriculture throughout the majority of the year. Precipitation is highly concentrated, with approximately 71 percent of the average annual rainfall (11.3 inches) occurring in a four-month window between December and March. Conversely, the summer months (June through September) experience negligible precipitation (less than 1 inch combined) while accounting for the highest ETo rates, peaking at 6.74 inches in July.

2.5.2. Potential Effects of Climate Change

Climate change adds a layer of uncertainty to the Region’s future water supply reliability. As part of development of TVMWD’s 2025 Water Resources Master Plan (WRMP) (TVMWD, 2025) (included in **Part 3, Appendix H**), TVMWD completed a Climate Change Vulnerability Assessment (Climate Assessment) in July 2024 (TVMWD, 2024a) (the Climate Assessment is included in **Part 3, Appendix I**). The Climate Assessment utilized data from DWR and 20 global climate models to project impacts on the Region’s water supplies and demands through 2045.

The assessment evaluated three potential future scenarios: (1) Drier with Extreme Warming ("Dry Hot"), (2) Median Future Conditions, and (3) Wetter with Moderate Warming ("Wet Warm"). Key climate change impacts identified in the standalone 2024 Climate Assessment include:

- Increased Temperatures and Outdoor Demand: Regional increases in average maximum temperatures are projected to reach approximately 4°F to 5°F by the mid-21st century. This warming trend is expected to increase evapotranspiration (ET) rates for landscaping and crops. Under the "Dry Hot" scenario, average annual outdoor water demand in the Region is projected to increase by approximately 5.8 percent by 2045. When combined with population growth, total water demand in the service area could increase by up to 15 percent under this scenario compared to baseline conditions.
- Hydrologic Volatility and Shorter Rainy Seasons: While the total volume of annual precipitation may not decrease drastically (projected decrease of 6.5 percent under Dry Hot conditions), the timing of rainfall is expected to shift. The Region is projected to experience a shorter rainy season with higher intensity precipitation events. This volatility poses a challenge for local spreading grounds, as storm flows may occur in peaks that exceed the immediate capacity of diversion facilities, potentially reducing the volume of water successfully captured for groundwater recharge.
- Reduced Local Surface Water: Under the “Dry Hot” scenario, flows in the San Gabriel River are projected to decrease by approximately 10 percent by 2045. This reduction directly impacts the availability of local surface water for treatment and groundwater replenishment.
- Increased Reliance on Imported Water: Due to the projected stabilization or slight decrease in local supplies (groundwater and surface water) combined with the climate-driven increase in demand, the Region’s reliance on imported water from MWD is projected to increase. The Climate Assessment indicates that imported water supply requirements could increase by approximately 15,400 acre-feet per year (AFY) by 2045 under extreme warming conditions.

While the 2024 Climate Assessment established the foundational vulnerabilities summarized above (using modeled theoretical demands through 2045), TVMWD and the Participating Agencies opted to utilize a more rigorous, hybrid analytical approach for the actual supply and demand projections presented in this 2025 RUWMP (which extends to 2050, as detailed in **Chapter 5**).

To ensure operational accuracy through 2050, the climate change factors derived from the Climate Assessment were updated through 2050 and applied directly to scale the future availability of local supplies. Conversely, rather than relying solely on modeled theoretical demand increases, this RUWMP projects future drought demands using empirical stress-test data. As described in **Chapter 5**, the relationship between actual elevated water use during the historical 2018–2022 drought and the 2021–2025 average baseline was used to establish localized drought scaling factors.

By applying these updated Climate Assessment climate factors through 2050 to the supply side and empirical historical scaling factors to the demand side, this RUWMP provides a conservative, operationally grounded assessment of the Region's reliance on imported water through 2050. Because of this shift from 2045 theoretical modeling to 2050 empirical historical scaling, the final volumetric projections in Chapter 5 supersede the preliminary 2045 estimates cited in the Climate Assessment summary above.

3. Regional Water Sources and Management

Securing a reliable water supply is the primary mission of TVMWD and its Participating Agencies. The Region relies on a diversified portfolio of water assets to meet the needs of its residential, commercial, and institutional customers.

Based on the regional baseline established for this Plan (2021–2025), the Region's water supply portfolio consists of:

- Imported Water (approximately 50%): Primarily water purchased from the MWD originating from the Colorado River and the SWP. This is supplemented by other imported or wholesale purchases from neighboring municipalities and mutual water companies.
- Local Groundwater (approximately 44%): Groundwater extracted from the Main San Gabriel, Chino, Six Basins, Spadra, Central, and Puente basins.
- Recycled Water (approximately 4%): Treated wastewater utilized for non-potable demands.
- Local Surface Water (approximately 2%): Surface flows diverted from the San Gabriel River and San Antonio Creek.

This chapter describes the current and planned water resources available to the Region through 2050. It also details the management frameworks – including legal judgments, Watermasters, and regional agreements – that govern how these resources are extracted, stored, and shared among the agencies.

Regional Water Supply Portfolio Overview

While the percentages above represent the aggregate regional supply, the specific water supply portfolios vary significantly among the individual retail agencies. Because of the Region's diverse geography, hydrogeology, and historical infrastructure development, each agency relies on a unique combination of imported water, groundwater, surface water, and recycled water.

For example, agencies located in the northern foothills may have access to local surface water diversions, while agencies in the southern portion of the Region may rely more heavily on imported water and recycled water. This diversity is a regional strength. However, it also means that each agency is impacted differently by drought, regulatory shifts, or infrastructure constraints.

Table 3-1 provides a high-level overview of the water sources currently utilized by each agency within the TVMWD service area.

Table 3-1. Overview of Water Sources Used by TVMWD Member Agencies

Agency	Groundwater	Imported Water	Surface Water	Recycled Water
Participating Agencies (RUWMP Co-Authors)	n/a	n/a	n/a	n/a
City of Glendora	✓	✓	n/a	n/a
City of La Verne	✓	✓	n/a	n/a
City of Pomona	✓	✓	✓	✓
Golden State Water Company (Claremont)	✓	✓	n/a	n/a
Golden State Water Company (San Dimas)	✓	✓	n/a	n/a
Rowland Water District	✓	✓	n/a	✓
Walnut Valley Water District	✓	✓	n/a	✓
Other TVMWD Agencies	n/a	n/a	n/a	n/a
Boy Scouts of America	n/a	✓	n/a	n/a
Cal Poly Pomona	✓	✓	n/a	✓
City of Covina	n/a	✓	n/a	n/a
Mt. San Antonio College	n/a	✓	n/a	n/a
Suburban Water Systems	✓	✓	n/a	✓
Covina Valley Water Company Retail (Formally Valencia Heights Water Company)	✓	✓	✓	n/a

Note: Some agencies purchase local surface water or groundwater that has been treated and delivered by third-party mutual water companies, such as the Covina Valley Water Company.
n/a = not applicable.

3.1. Imported Water

Imported water is the single largest source of supply for the Region. While several retail agencies' supply portfolios include external wholesale purchases (detailed in **Section 3.1.4**), the vast majority of the Region's imported water is provided by TVMWD. TVMWD is a member agency of MWD, a regional wholesaler that delivers water to 26member public agencies across Southern California. MWD imports water from two primary sources: the Colorado River via the CRA and the Sacramento-San Joaquin Bay-Delta via the SWP.

TVMWD purchases both treated and untreated imported water from MWD. Treated water is delivered directly to retail agencies through service connections to the MWD distribution system. Untreated water is delivered to TVMWD's Miramar Water Treatment Plant for treatment and distribution or used for groundwater replenishment in the Main San Gabriel and Six Basins.

3.1.1. Supply Description and Management

MWD's primary sources of water are the Colorado River and the SWP. To secure these supplies against drought, regulatory restrictions, and climate change, MWD continues to invest in a diverse resource mix, including storage (such as Diamond Valley Lake), water transfers, and conservation programs.

Colorado River Aqueduct

The CRA transports water 242 miles from Lake Havasu to Lake Mathews in Riverside County. MWD's entitlement to Colorado River water is established by the "Law of the River," a collection of compacts, federal laws, and court decrees. Although MWD's base apportionment is 550,000 AFY, MWD supplements this supply through agricultural conservation programs (such as the agreement with the Palo Verde Irrigation District) and storage programs in Lake Mead.

It is important to note that due to hydraulic constraints in the regional distribution system, several of TVMWD's member agencies are located in "SWP Dependent Areas." These areas (including parts of the cities of Glendora and La Verne) cannot receive Colorado River water and are solely dependent on supplies from the SWP.

State Water Project

The SWP, managed by DWR, transports water from Northern California to Southern California via the California Aqueduct. MWD is the largest contractor of the SWP, with a maximum Table A allocation of 1,911,500 AFY.

Actual SWP deliveries vary annually based on hydrology, reservoir storage in Northern California, and environmental regulations in the Sacramento-San Joaquin Delta. To manage this variability, MWD utilizes its significant storage capacity (surface reservoirs and groundwater banking) to store surplus water during wet years for use during dry years.

TVMWD Access to Imported Water

Historically, TVMWD accessed MWD supplies through a Purchase Order structure with tiered rates. However, MWD recently transitioned to a single volumetric rate structure (MWD 2025, 2026a). Over the most recent five-year baseline period (2021–2025), TVMWD's annual imports have averaged approximately 55,600 AFY. TVMWD continues to coordinate closely with MWD to ensure reliable, cost-effective access to imported supplies.

3.1.2. Supply Reliability and Climate Impacts

The amount of water delivered through the SWP and CRA in any given year is highly dependent on statewide hydrology, snowpack, and regulatory constraints (such as pumping restrictions in the Sacramento-San Joaquin Bay-Delta to protect endangered species). During severe, multi-year droughts, allocations from the SWP have historically dropped as low as 5 percent of contracted amounts (e.g., in 2014 and 2021). Furthermore, the Colorado River Basin has experienced a prolonged two-decade drought, leading to historic shortage declarations by the U.S. Bureau of Reclamation.

MWD Storage and Reliability Mitigation

If TVMWD relied solely on the annual yield of the SWP and CRA, the Region would face severe structural deficits during droughts. However, MWD has invested billions of dollars in a massive regional storage portfolio – including Diamond Valley Lake (DVL), Lake Mathews, Lake Skinner, and extensive Central Valley and Mojave groundwater banking programs.

Entering the 2026 planning cycle, MWD's storage reservoirs are situated at near-record highs, holding nearly 4 million acre-feet (MAF) of water. As summarized in **Table 3-2**, MWD's 2025 UWMP reliability modeling (provided in **Part 3, Appendix J**) demonstrates that even with severe cutbacks on SWP and Colorado River supplies, MWD possesses sufficient storage reserves to meet all wholesale member agency demands without triggering mandatory shortage allocations over the next five years, and projects 100 percent supply capability through 2050 under all modeled drought scenarios (MWD, 2026b).

Table 3-2. Projected Availability of TVMWD Wholesale Imported Supplies (from MWD)

Hydrologic Scenario	MWD Base Allocations (SWP and CRA)	MWD Storage Withdrawals (DVL, Groundwater Banks)	TVMWD Projected Imported Reliability
Normal Year	Average to High	Minimal (Net Storage Accumulation)	100% of Demand Met
Single Dry Year	Constrained	High (Storage Drawn Down)	100% of Demand Met
5-Year Drought	Severely Constrained	Maximum (Sustained Storage Drawdown)	100% of Demand Met

Infrastructure Constraints: SWP-Dependent Areas

While MWD's aggregate supply is highly reliable, TVMWD must navigate localized infrastructure constraints. Due to pipeline elevations and network physics, certain northern portions of the TVMWD service area – specifically serving the City of Glendora and the City of La Verne – are classified as "SWP-Dependent Areas." These zones cannot physically receive treated Colorado River water.

When SWP allocations are severely constrained during extreme droughts, MWD cannot simply substitute CRA water for these agencies. To maintain reliability in these specific zones, TVMWD and the Participating Agencies rely on local groundwater extraction, shifting supplies via the Pomona-Walnut-Rowland Joint Water Line (JWL), and utilizing TVMWD's cyclic storage accounts in the Main San Gabriel and Six Basins to offset the localized imported deficit.

To mitigate these constraints, MWD is actively constructing and planning a suite of infrastructure projects under its Capital Investment Plan designed to physically push stored water into SWP-Dependent Areas during extreme droughts.

For the eastern portion of the MWD's service area – which directly benefits TVMWD's SWP-dependent agencies like the cities of the Glendora and La Verne – MWD is constructing the Diamond Valley Lake (DVL) to Rialto Pipeline Delivery Project (anticipated completion in late 2028). This project utilizes the Wadsworth Pumping Plant to pump stored water from DVL (which includes both banked SWP and Colorado River water) north into the Rialto Pipeline, reducing the area's strict reliance on real-time California Aqueduct flows and enhancing drought reliability.

Additionally, MWD's 2025 UWMP identifies additional regional projects to provide relief to SWP-Dependent Areas across Southern California. These include west-side distribution upgrades – such as the Sepulveda Feeder Pumping Station and Greg Avenue Pump Station expansions – which reverse flow to push treated water into areas normally reliant on the West Branch of the SWP. Regionally, MWD is also advancing Pure Water Southern California, a massive, advanced water purification project that could produce up to 150 million gallons per day (MGD) of new supply. MWD is planning over 50 miles of large-

diameter pipeline from Carson to La Verne to provide raw water augmentation directly into the Weymouth Water Treatment Plant, which would further reduce the Region's demand for imported SWP supplies and increase reliability for TVMWD.

MWD Supply Reliability Modeling

As the regional wholesaler, MWD is responsible for projecting the reliability of imported water supplies for its member agencies. In its 2025 Draft UWMP, MWD assessed its ability to meet demands under normal, single-dry, and five-year consecutive drought conditions through the year 2050 (MWD, 2026b).

MWD's analysis incorporates DWR's Delivery Capability Report (DCR) CalSim models (DWR, 2025) and accounts for potential future constraints on the Colorado River. MWD's modeling demonstrates that, through the implementation of its Integrated Resources Plan, which includes active conservation, local resource development, and storage management, it has sufficient supply capabilities to meet all projected member agency supplemental water demands through 2050, even under a repeat of historic drought conditions.

Based on MWD's reliability assessment, TVMWD projects that imported water will be 100 percent reliable to meet the projected demands of its Participating Agencies through the planning horizon of this RUWMP.

3.1.3. Imported Water Quality

MWD is responsible for managing the water quality of the SWP and CRA and providing treated and untreated water that meets or exceeds all regulatory standards. The water quality of the SWP and CRA differ significantly, and the proportion of each source delivered to TVMWD fluctuates based on hydrology, MWD operational decisions, and drought conditions.

State Water Project Quality

Water imported via the SWP originates in the Sierra Nevada and flows through the Sacramento-San Joaquin Bay-Delta. SWP water is generally characterized by lower salinity, with Total Dissolved Solids (TDS) typically ranging from 250 to 350 milligrams per liter (mg/L). However, as water flows through the Sacramento-San Joaquin Bay-Delta, it picks up organic carbon and bromide. When treated with chlorine, these natural constituents can react to form Disinfection Byproducts (DBPs), which are strictly regulated by the EPA. SWP supplies are also susceptible to seasonal algal blooms, which can cause harmless but noticeable taste and odor issues, as well as suspended solids from winter storm runoff.

Colorado River Aqueduct Quality

Water imported via the CRA generally contains higher mineral content and salinity. TDS levels in CRA water are typically twice as high as SWP water, averaging between 580 mg/L and 620 mg/L, and can spike up to 700 mg/L or higher during prolonged droughts in the Colorado River Basin. In addition to higher hardness and salinity, the Colorado River watershed has historically faced localized challenges with perchlorate, uranium, and chromium-6, though MWD actively manages and monitors these constituents to ensure they remain well below regulatory limits prior to delivery. The CRA system also

requires aggressive management to control the spread of invasive Quagga mussels, which can clog intake and delivery infrastructure.

Salinity Management and Blending Strategies

Salinity is a critical water quality metric for the Region. High TDS in imported water not only affects the aesthetic quality (hardness) of drinking water but also has cascading impacts on the Region's local resources. When high-TDS imported water is used indoors, it increases the salinity of the wastewater sent to local reclamation plants. This, in turn, increases the salinity of the recycled water produced, which can limit its use for landscape irrigation and groundwater recharge due to strict Regional Water Quality Control Board Basin Plan objectives.

To mitigate this, MWD attempts to blend CRA water with lower-salinity SWP water to achieve a target TDS of approximately 500 mg/L for its treated water deliveries. However, during severe drought years when SWP allocations are drastically reduced, MWD must rely more heavily on the CRA. During these periods, TVMWD and its retail agencies experience higher salinity in their imported supplies.

Local Treatment and Operations

While MWD delivers some pre-treated water directly to TVMWD's retail agencies for potable use, TVMWD also purchases raw, untreated imported water. TVMWD is responsible for treating this raw water at the Miramar Water Treatment Plant (MWTP) located in Claremont. The MWTP utilizes conventional filtration and disinfection processes to meet all Division of Drinking Water (DDW) standards before distributing the water to member agencies. The MWTP has a design capacity of 25 MGD and is undergoing continuous modernization, including planned upgrades to incorporate Granular Activated Carbon (GAC) into its filter basins to proactively address contaminants of emerging concern.

Additionally, untreated imported water is delivered to the Covina Valley Water Company (CVWC), which treats the water at its William B. Temple Treatment Plant prior to supplying it to local agencies in the western portion of the Region. Both TVMWD and CVWC must dynamically adjust their treatment plant operations to handle the shifting water quality profiles of MWD's blend of SWP and CRA water.

3.1.4. Other Imported and Purchased Water Supplies

While TVMWD/MWD supplies constitute the vast majority of imported water in the Region, several retail agencies rely on external imports, wholesale purchases, and inter-agency transfers to meet their localized demands. To accurately capture the Region's total water portfolio in the supply and demand assessments (**Section 5**), these distinct supplies are categorized collectively as "Imported Water (Other)."

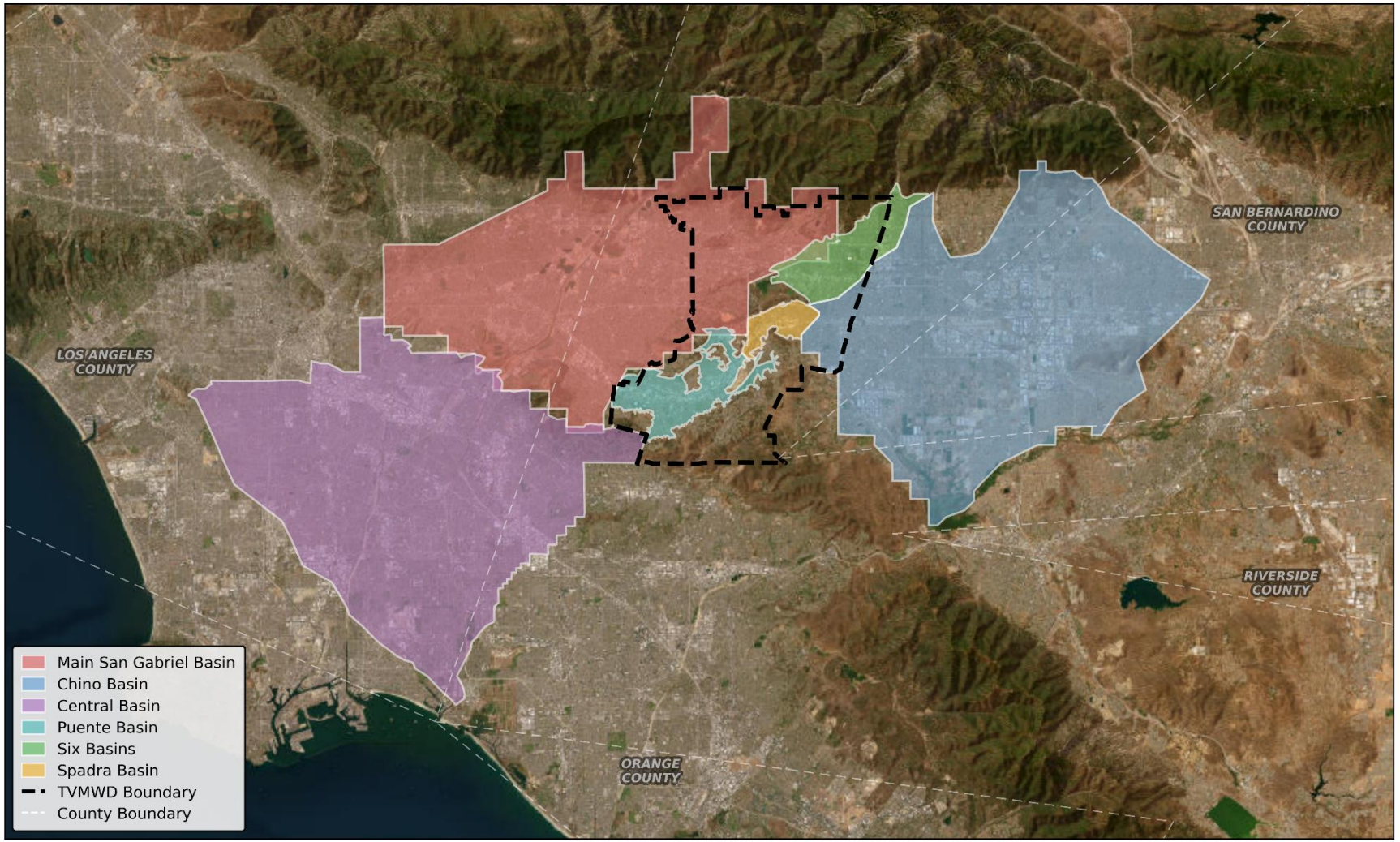
This category encompasses water secured outside of the TVMWD wholesale network. This includes wholesale purchases of treated surface water and groundwater from mutual water companies (such as the Covina Valley Water Company), purchases from neighboring municipalities (such as the City of Upland), and other external basin transfers utilized by agencies like Suburban Water Systems to serve their respective customers.

3.2. Groundwater

Groundwater is a foundational component of the Region's water supply portfolio, accounting for approximately 44 percent of the baseline water use (2021–2025 average). The Participating Agencies rely on local groundwater to meet baseload demands and to buffer against fluctuations in imported water availability during dry years.

The Region overlies a complex network of groundwater basins, each with distinct hydrogeological characteristics, recharge capabilities, and legal frameworks. The local groundwater supply utilized by the agencies within the TVMWD service area is primarily drawn from four basins that underlie the Region: the Main San Gabriel Basin, the Chino Basin, the Six Basins, and the Spadra Basin. Additionally, agencies and joint powers authorities operating within the TVMWD service area hold adjudicated groundwater rights in two supplemental basins – the Central Basin and the Puente Basin – which are hydrologically connected to the Region's primary basins but lie partially or wholly south of the TVMWD service area boundary. **Figure 3-1** summarizes the groundwater basins in the Region.

Figure 3-1. TVMWD Regional Groundwater Basins



Groundwater extraction within the Region is highly regulated. The Main San Gabriel, Chino, Six Basins, Central, and Puente Basins are adjudicated, meaning that groundwater rights, safe yields, and recharge obligations are governed by court judgments and managed by court-appointed Watermasters or administrative bodies. Because they are adjudicated, these basins are exempt from the requirement to develop a Groundwater Sustainability Plan (GSP) under the Sustainable Groundwater Management Act (SGMA). The Spadra Basin is the only non-adjudicated basin utilized by the Region and is managed locally in compliance with SGMA.

While TVMWD acts primarily as a wholesale importer and only directly produces a small amount of groundwater from the Six Basins, it plays a vital role in regional groundwater sustainability. TVMWD delivers untreated imported water to replenish these local aquifers and maintains significant cyclic storage accounts to ensure water is available during extended droughts.

The physical characteristics, management structures, TVMWD's and the Participating Agencies' specific involvement in each of these basins are detailed in the following subsections.

3.2.1. Main San Gabriel Basin

The Main San Gabriel Basin (DWR Basin No. 4-013) is the primary groundwater basin of the Region's local supply, providing approximately 64 percent of the total regional groundwater utilized by agencies within the TVMWD service area. Within the context of this RUWMP, it primarily serves the western portion of the Region, including the City of Glendora, Golden State Water Company (San Dimas), and several Other Member Agencies such as Suburban Water Systems and the City of Covina.

Physical Characteristics and Hydrogeology

The Main San Gabriel Basin lies in eastern Los Angeles County and encompasses a surface area of approximately 167 square miles. The basin is bounded by the San Gabriel Mountains to the north, the Raymond fault to the northwest, the Repetto, Monterey, and Puente Hills to the south and southwest, and the San Jose fault to the east.

The basin's water-bearing formations consist of highly permeable alluvial deposits of sand, gravel, and silt. The basin is primarily drained by the San Gabriel River and the Rio Hondo. Dominant recharge to the sub-basin comes from the percolation of precipitation, infiltration of runoff from the San Gabriel Mountains, and the artificial recharge of imported water and recycled water at spreading grounds operated by the Los Angeles County Department of Public Works. Because of the basin's high permeability, it responds rapidly to both extraction and recharge events, making it an ideal basin for large-scale conjunctive use and water banking. **Table 3-3** summarizes the aggregated historical groundwater production from the Main San Gabriel Basin by retail agencies within the TVMWD service area over the 2021–2025 baseline period.

Table 3-3. Historical Groundwater Production from the Main San Gabriel Basin by TVMWD Agencies (AFY)

Water Source / Agency	2021	2022	2023	2024	2025	5-Year Average
Participating Agencies	12,483	11,055	9,022	9,951	12,645	11,214
Other TVMWD Agencies*	29,120	28,961	28,568	29,005	28,940	28,919
Regional Total	41,603	40,016	37,590	38,956	41,046	40,133

*Note: To accurately reflect the total regional reliance on the Main San Gabriel Basin, this table incorporates estimated groundwater production for Other Member Agencies within the TVMWD service area. Because these agencies are not formal signatories to this 2025 RUWMP, their historical production volumes were estimated utilizing the best available public data, including 2020 UWMPs and recent Main San Gabriel Basin Watermaster Annual Reports.

Adjudication and Basin Management

The Main San Gabriel Basin was adjudicated in 1973 (Upper San Gabriel Valley MWD v. City of Alhambra). The Judgment (included in **Part 3, Appendix K**) established the Main San Gabriel Basin Watermaster to manage the basin and defined the prescriptive pumping rights of the overlying producers.

Instead of a fixed safe yield, the Watermaster manages the basin through an Operating Safe Yield (OSY), which is determined annually based on groundwater elevations, rainfall, and anticipated imported water availability. Historical OSYs for the Main San Gabriel Basin are shown in **Table 3-4.**

Table 3-4. Historical and Projected Operating Safe Yield of the Main San Gabriel Basin

Fiscal Year(s)	Operating Safe Yield (AF)
2010-2011	170,000
2012	210,000
2013	200,000
2014	180,000
2015-2024	150,000
2025-2026	160,000
2027-2030*	140,000

*Note: Projected OSYs are from *Main San Gabriel Basin Watermaster Report on Final Determination of Operating Safe Yield for 2025-26 Through 2029-30* (Main San Gabriel Basin Watermaster, 2025)

Pumping rights for each producer are calculated as a percentage of the OSY. However, extractions are not limited to a producer's pumping rights. If a producer extracts water in excess of their right, they incur a "Replacement Water" assessment. The Watermaster uses these assessments to purchase untreated imported water to recharge the basin, thereby ensuring long-term sustainability and preventing overdraft.

Additionally, the Main San Gabriel Basin Watermaster annually adopts a Five-Year Water Quality and Supply Plan (included in **Part 3, Appendix K**) to proactively manage the basin's groundwater quality and coordinate the delivery of Replacement Water (Main San Gabriel Watermaster, 2023). Because the Main San Gabriel Basin contains multiple EPA Superfund sites and areas impacted by legacy contaminants

(such as VOCs, PFAS, and nitrates), this Five-Year Water Quality and Supply Plan serves as a critical regulatory and reliability tool. It outlines the strategic funding and deployment of wellhead treatment facilities to prevent the migration of contaminant plumes. By treating contaminated groundwater and aggressively managing recharge, the Watermaster prevents wells from becoming "stranded," thereby safeguarding the basin's OSY and preventing unexpected, emergency spikes in demand for TVMWD's imported water during droughts.

Projected Supply Methodology

Because the OSY is determined annually by the Watermaster based on real-time hydrological conditions, reservoir storage, and groundwater elevations, this RUWMP does not attempt to forecast a firm administrative OSY out to the year 2050. Instead, to ensure this aggregated regional projection is realistic, TVMWD and the Participating Agencies compared the anticipated future groundwater extractions against the recent historical range of the basin's OSY.

Future local groundwater supplies from the Main San Gabriel Basin were developed using a bottom-up, agency-specific approach. For the Participating Agencies, the TVMWD Climate Assessment's groundwater climate factors (discussed in **Section 2.5.2**) for 2030-2050 were applied directly to each agency's individual 2021-2025 actual average pumping baseline (TVMWD, 2024a). For the Other Member Agencies, Main San Gabriel Basin extractions were estimated utilizing the best available public data, as shown in **Table 3-5**. These individual projections were then aggregated to determine the total regional Main San Gabriel Basin supply through 2050.

Based on this bottom-up aggregation, regional extractions from the Main San Gabriel Basin are projected to range from 40,886 AF in 2030, gradually decreasing to 40,102 AF by 2050. Because these projected extractions fall below the Region's historical five-year average (41,046 AFY) during the basin's most restrictive recent historical OSYs (150,000-160,000 AF), this analysis confirms that the projected extractions remain highly plausible and can be sustainably managed through the Watermaster's existing Replacement Water assessment framework.

TVMWD's Role and Storage Programs

As a regional wholesaler, TVMWD is a critical partner in the management of the Main San Gabriel Basin. TVMWD delivers untreated imported water from MWD to the basin's spreading grounds to satisfy the Replacement Water obligations of the pumpers located within TVMWD's service area.

To capture additional imported supplies during wet years when MWD water is abundant, TVMWD participates in a Cyclic Storage Program within the basin. The Cyclic Storage Agreement between MWD, TVMWD, and the Watermaster (included in **Part 3, Appendix K**) allows for the pre-delivery and storage of up to 50,000 AF of imported water. This agreement, originally signed in 1991, was recently amended effective June 2024 to extend the termination date to June 2034. TVMWD had approximately 3,079 AF stored in the basin as of the end of 2025.

Additionally, the Puente Basin Water Agency (PBWA) – a joint powers authority between Rowland Water District and Walnut Valley Water District – maintains a storage and export agreement with the

Main San Gabriel Basin for 30,000 AF (included in **Part 3, Appendix K**). This banking arrangement allows PBWA to purchase surplus imported water or local supplies when available, bank them in the Main San Gabriel Basin, and subsequently extract and export that water to the Rowland and Walnut Valley service areas during dry years or periods of imported supply constraint. This provides a critical local buffer for these two retail agencies, which are historically highly dependent on imported water.

Table 3-5 summarizes the current regional storage agreements and capacities within the Main San Gabriel Basin.

Table 3-5. TVMWD Storage and Export Agreements in the Main San Gabriel Basin

Agreement / Account Type	Managing Entities	Maximum Storage Capacity (AF)	Estimated Stored Balance (End of 2025) (AF)
Cyclic Storage Agreement	TVMWD, MWD, Main Basin Watermaster	50,000	3,079
Storage and Export Agreement	PBWA	30,000	3,000[1]

1. Balance estimated based on the PBWA Board of Commissioners' October 2024 authorization to purchase 3,000 AF of cyclic storage for the 2025-2029 water years (PBWA, 2024).

3.2.2. Chino Basin

The Chino Basin (DWR Basin No. 8-02.01) provides approximately 17 percent of the total regional groundwater utilized by agencies within the TVMWD service area. Within the context of this RUWMP, extraction from the Chino Basin is predominantly utilized by the City of Pomona to serve the eastern portion of the Region.

Physical Characteristics and Hydrogeology

The Chino Basin is a large groundwater basin located in the southwest corner of San Bernardino County and the northwest corner of Riverside County. The basin is bordered by the San Gabriel Mountains to the north, the Rialto-Colton fault to the east, and the Jurupa Mountains and Puente Hills to the south and southwest. The surface area of the Chino Basin is approximately 154,000 acres (or 240 square miles). The San Antonio Creek and Cucamonga Creek drain the Chino Basin area southward and flow into the Santa Ana River. The Chino Basin is a subbasin of the Upper Santa Ana Valley Groundwater Basin and has a total storage capacity of approximately 5,000,000 AF.

The basin consists of highly permeable alluvial deposits. Surface drainage in this portion of the region flows generally southward via San Antonio Creek and Chino Creek toward the Santa Ana River. The principal sources of natural recharge are percolation of precipitation and infiltration of runoff from the San Gabriel Mountains. This is supplemented by significant artificial recharge of imported water and recycled water managed by regional partners.

Adjudication and Basin Management

The Chino Basin was adjudicated in 1978 (Chino Basin Municipal Water District v. City of Chino et al.) (included in **Part 3, Appendix L**). The Judgment established the Chino Basin Watermaster to account for

and implement the management of the basin, and it contains a physical solution to meet the requirements of all water users.

The Chino Basin Judgment originally established a Safe Yield for the Chino Basin of 140,000 AFY. The Safe Yield is typically recalculated every 10 years and is defined in the Chino Basin Judgment as "the long-term average annual quantity of ground water (excluding replenishment of stored water but including return flow to the Basin from use of replenishment or stored water) which can be produced from the Chino Basin under conditions of a particular year without causing an undesirable result". Pursuant to the most recent Safe Yield reset effective in 2020, the Safe Yield for the Chino Basin is currently 131,000 AFY (effective from July 1, 2020 to June 30, 2030).

In April 2017, a Court Order regarding the Safe Yield of the Chino Basin (San Bernardino County Superior Court, 2017) was issued, which caused the Safe Yield to be recalculated in 2025. The 2017 Safe Yield Court Order also required changes to the Safe Yield Reset methodology. The methodology was updated in 2022, and the 2025 Safe Yield Reset process began in 2023. The 2025 Safe Yield Reset is not yet final, so for purposes of this UWMP, the Safe Yield for the Chino Basin is based on the currently effective value of 131,000 AFY. Additional information on the 2025 Safe Yield Reset is available on the Chino Basin Watermaster website (https://www.cbwm.org/pages/syrm/).

The Chino Basin Judgment's allocation of the Safe Yield includes three separate pools:

1. Overlying Agricultural Pool (farmers, State of California, and other minimal producers)
2. Overlying Non-Agricultural Pool (businesses and industries)
3. Appropriative Pool (cities, agencies, and other water suppliers, including Ontario)

As of July 2020, the Safe Yield is allocated among these three pools at 82,800 AFY to the Overlying Agricultural Pool, 7,366 AFY to the Overlying Non-Agricultural Pool, and 40,834 AFY to the Appropriative Pool.

Appropriators who are Parties to the Chino Basin Judgment are authorized to produce groundwater in excess of their rights. For any groundwater produced in excess of their rights, Appropriators pay assessments to the Chino Basin Watermaster, which are used to purchase water to replenish the Chino Basin. The Chino Basin Watermaster purchases water from MWD through IEUA and/or TVMWD, on behalf of the Parties, to replenish the Chino Basin. Occasionally, Watermaster has purchased water from storage accounts from parties within the Chino Basin.

In addition to the water rights described above, the Judgment provides for additional provisions to allocate the Chino Basin water as described below:

Land Use Conversion

When land is converted from agricultural to urban use, water rights are permanently transferred from the Overlying Agricultural Pool to the Appropriative Pool. Land use conversions assign the increase in Appropriative Pool rights to the party whose sphere of influence includes the converted land.

Annual Unused Overlying Agricultural Pool Rights

The Chino Basin Watermaster also reallocates the unused portion of the Chino Basin Safe Yield from the Overlying Agricultural Pool to the Appropriative Pool members' rights in any year. These transfers are permanent if agricultural land has been converted to non-agricultural use (described above), or temporary if agricultural pool extractions are less than their share of the Safe Yield. From FY20/21 to FY24/25, 9,000 AFY of rights have been reallocated from the Overlying Agricultural pool to the Appropriative Pool that were not claimed as part of a permanent land conversion.

Today, the basin is comprehensively managed through the implementation of the Optimum Basin Management Program (OBMP) (included in **Part 3, Appendix L**), which was originally developed in 2000 and updated in 2020 (Chino Basin Watermaster, 2020). The OBMP functions similarly to a GSP under SGMA, featuring robust monitoring, subsidence management, and coordinated recharge programs to ensure long-term sustainability.

Chino Basin Storage Management Plan

The Peace Agreement (2000) (included in **Part 3, Appendix L**) establishes rules and regulations, standard storage agreements, and related forms for storage in the Chino Basin. Since 2000, Chino Basin Watermaster administers groundwater storage in the Chino Basin pursuant to the storage management plan described in the 2000 OBMP.

There are five types of storage accounts: Excess Carryover, Local Supplemental-Recycled, Local Supplemental-Imported, Pre-2000 Quantified Supplemental, and Storage and Recovery.

- Excess Carryover Account – includes a Party's unproduced rights in the Safe Yield (Safe Yield for Overlying Non-Agricultural Pool Parties and OSY for Appropriative Pool Parties) and Basin Water purchased or transferred from other Parties.
- Local Supplemental-Recycled Account– includes recycled water that is recharged by a producer and similar water acquired from other Parties.
- Local Supplemental-Imported Account– includes imported water that is recharged by a producer and similar water acquired from other Parties.
- Pre-2000 Quantified Supplemental Account – functions similar to Local Supplemental Water Account.
- Storage and Recovery Account – holds Supplemental Water (imported or recycled) and is intended to provide a broad and mutual benefit to the Parties of the Judgment.

Dry Year Yield Program

MWD's Dry-Year Yield Program (DYYP) is the only active Storage and Recovery Program in Chino Basin. This program is a water exchange as discussed in **Section 3.7.1**.

Table 3-6 summarizes the aggregated historical groundwater production from the Chino Basin by retail agencies within the TVMWD service area over the 2021–2025 baseline period.

Table 3-6. Historical Groundwater Production from the Chino Basin by TVMWD Agencies (AFY)

Water Source / Agency	2021	2022	2023	2024	2025	5-Year Average
Participating Agencies	10,255	11,222	11,111	11,440	10,734	10,952
Other TVMWD Agencies	0	0	0	0	0	0
Regional Total	10,255	11,222	11,111	11,440	10,734	10,952

Projected Supply Methodology

Utilizing the same bottom-up, climate-scaled methodology described for the Main San Gabriel Basin (see **Section 3.2.1**), future local groundwater supplies from the Chino Basin were projected through 2050. This approach ensures regional consistency while aligning with the management criteria established by the Chino Basin Watermaster.

Based on this regional aggregation, extractions from the Chino Basin by agencies within the TVMWD service area are projected to range from 11,053 AF in 2030, gradually decreasing to 10,204 AF by 2050. While the near-term projected extraction (11,053 AF) represents a slight increase over the 2021–2025 historical baseline average (10,952 AFY), these extractions remain consistent with the agencies' historically exercised rights within the basin's Appropriative Pool. As described above, because the Chino Basin is strictly adjudicated, all extractions – by TVMWD agencies and the numerous other overlying and appropriative purveyors sharing the basin's 131,000 AF Operating Safe Yield – are comprehensively tracked by the Watermaster. Any pumping that exceeds an individual agency's specific allocated share is mitigated through mandatory replenishment assessments used to purchase imported recharge water. Therefore, this analysis confirms that the projected extractions by TVMWD agencies are plausible and can be sustainably managed within the Optimum Basin Management Program (OBMP) framework.

TVMWD's Role and Storage Programs

Because the Chino Basin largely falls outside of TVMWD's primary wholesale service boundaries, TVMWD's interaction with the basin is facilitated through partnerships with its member agencies, primarily the City of Pomona (included in **Part 3, Appendix L**). Currently, TVMWD holds a storage account of 1,390 AF in the Chino Basin through a one-time agreement with the City of Pomona. **Table 3-7** summarizes TVMWD's current storage capacity within the Chino Basin.

Table 3-7. TVMWD Storage Agreements in the Chino Basin

Agreement / Account Type	Managing Entities	Maximum Storage Capacity (AF)	Estimated Stored Balance (End of 2025) (AF)
One-Time Storage Agreement	TVMWD, City of Pomona	1,390	1,390

3.2.3. Six Basins

The Six Basins area provides approximately 13 percent of the total regional groundwater utilized by agencies within the TVMWD service area. Within the context of this RUWMP, it is a vital local supply

source for the City of Pomona, the City of La Verne, Golden State Water Company (Claremont system), and uniquely, TVMWD itself, which directly extracts groundwater from this basin to supplement its wholesale portfolio.

Physical Characteristics and Hydrogeology

Located along the base of the San Gabriel Mountains, the Six Basins area overlies a portion of the eastern San Gabriel Valley in Los Angeles County and western San Bernardino County. The area is bounded by the San Gabriel Mountains to the north, the San Jose Hills to the south, the Main San Gabriel Basin to the west, and the Chino Basin to the east.

As the name implies, the area consists of six interconnected groundwater sub-basins: Canyon Basin, Upper Claremont Heights Basin, Lower Claremont Heights Basin, Pomona Basin, Live Oak Basin, and Ganesha Basin. The primary source of natural groundwater replenishment is surface-water runoff from precipitation falling on the San Gabriel Mountains, which infiltrates through highly permeable sediments, predominantly at the San Antonio Spreading Grounds. **Table 3-8** summarizes the aggregated historical groundwater production from the Six Basins by retail agencies within the TVMWD service area over the 2021–2025 baseline period.

Table 3-8. Historical Groundwater Production from the Six Basins by TVMWD Agencies (AFY)

Water Source / Agency	2021	2022	2023	2024	2025	5-Year Average
Participating Agencies	9,581	8,728	6,682	7,629	9,597	8,444
Other TVMWD Agencies	0	0	0	0	0	0
Regional Total	9,581	8,728	6,682	7,629	9,597	8,444

Adjudication and Basin Management

The pumping and storage rights for the Six Basins were adjudicated in 1998 (Southern California Water Company vs. City of La Verne, et al., Case No. KC029152). The Judgment (included in **Part 3, Appendix M**) established the Six Basins Watermaster to oversee the physical solution and coordinated management of the interconnected basins.

Pursuant to the Judgment, the statutory safe yield of the Six Basins is 19,300 AFY, defined as the amount of water that can be produced by the parties on an annual basis to ensure long-term, sustainable groundwater production. For management purposes, the Judgment divides the Six Basins into two distinct operational areas. The production, replenishment, and recovery of the Live Oak and Ganesha Basins (collectively referred to as the "Two Basins") are reserved solely for the City of La Verne and are not subject to groundwater production limitations, provided that La Verne's production does not substantially injure the rights of any other Six Basin parties.

Conversely, the Canyon, Upper Claremont Heights, Lower Claremont Heights, and Pomona Basins (collectively referred to as the "Four Basins") are managed using an OSY rather than a static safe yield. The Watermaster annually determines the OSY based on current groundwater elevations, precipitation, and recharge capabilities to ensure the parties can reliably pump their respective rights while preventing

overdraft and mitigating the risk of high groundwater damaging shallow infrastructure during wet periods. **Table 3-9** summarizes the recent OSY determinations for the Four Basins.

Table 3-9. Recent Operating Safe Yields (Four Basins)

Calendar Year	Operating Safe Yield (AF)
2011-2013	17,500
2014	16,500
2015-2016	16,000
2017	14,000
2018	13,500
2019-2023	13,000
2024	13,500
2025	14,000

Pumping rights for each producer in the Four Basins are allocated based on the annual OSY. To provide operational flexibility, the Judgment allows producers to carry over a portion of their unused annual pumping rights (up to a maximum of 25% of their share of the OSY) into the following year. Furthermore, extractions are not strictly limited to a producer's base pumping right. If a producer extracts water in excess of their right, that excess amount is either deducted from their following year's water rights or they incur a replacement water assessment. The Watermaster utilizes these assessments to purchase supplemental water (such as untreated imported water from TVMWD) to recharge the basin, thereby ensuring long-term sustainability, providing year-to-year flexibility for the pumpers, and preventing overdraft.

Additionally, the Six Basins Watermaster actively manages the basin's groundwater quality and coordinates recharge efforts through its comprehensive Strategic Plan (included in **Part 3, Appendix M**) and ongoing Watermaster management initiatives. Because portions of the Six Basins face localized water quality challenges (such as nitrate and VOC accumulation, particularly in the Pomona Basin), these management strategies serve as critical regulatory and reliability tools. They guide the strategic funding and deployment of wellhead treatment and blending facilities to prevent the migration of contaminant plumes. By treating contaminated groundwater and aggressively managing stormwater and imported water recharge at facilities like the San Antonio Spreading Grounds, the Watermaster prevents wells from becoming "stranded." This safeguards the basin's OSY and prevents unexpected, emergency spikes in demand for TVMWD's imported water during droughts.

Projected Supply Methodology

Utilizing the same bottom-up, climate-scaled methodology described for the Main San Gabriel Basin (see **Section 3.2.1**), future local groundwater supplies from the Six Basins were projected through 2050. Based on this bottom-up aggregation, regional extractions from the Six Basins are projected to range from 9,355 in 2030, gradually decreasing to 8,811 by 2050. While these projected volumes represent a slight increase over the 2021–2025 historical average (8,438 AFY), they remain conservative and sustainable. The maximum projected extraction of 9,355 AF is less than half of the basin's adjudicated Base Safe Yield (19,300 AF) and remains well below the Watermaster's most restrictive recent drought

OSY (13,000 AF, in 2021). Therefore, this analysis confirms that the projected extractions are plausible and can be sustainably managed within the Watermaster's existing framework.

TVMWD's Role and Storage Programs

TVMWD's relationship with the Six Basins is unique among the region's groundwater sources because TVMWD acts as both a replenisher and a direct producer. TVMWD owns and operates three active groundwater extraction wells located in the Six Basins. The raw groundwater produced from these wells is conveyed to TVMWD's MWTP, where it is treated and blended with imported supplies before being distributed to member agencies.

To support dry-year reliability, TVMWD holds a direct operational storage account in the Six Basins with a capacity of 3,500 AF (included in **Part 3, Appendix M**). **Table 3-10** summarizes TVMWD's current storage capacity within the Six Basins. TVMWD actively supports the replenishment of the basin by delivering untreated imported water to the San Antonio Spreading Grounds, occasionally utilizing interconnections like the City of Pomona's Canon pipeline to maximize surface water capture and recharge.

Table 3-10. TVMWD Storage Agreements in the Six Basins

Agreement / Account Type	Managing Entities	Maximum Storage Capacity (AF)	Estimated Stored Balance (End of 2025) (AF)
Operational Storage Account	TVMWD, Six Basins Watermaster	3,500	~3,500[1]

1. Based on 2024 Annual Watermaster Report (Six Basins Watermaster, 2025). Final 2025 stored balances are subject to ongoing Six Basins Watermaster reconciliation.

3.2.4. Spadra Basin

While smaller in volume than the other regional basins, the Spadra Basin provides a localized and highly valuable groundwater supply for the southeastern portion of the Region. Because groundwater produced from this basin often requires treatment or blending to comply with SWRCB-DDW drinking water standards, it is currently utilized primarily to meet non-potable overlying demands. Within the context of this RUWMP, extractions from the Spadra Basin are utilized primarily by the WVWD, the City of Pomona, and Cal Poly Pomona.

Physical Characteristics and Hydrogeology

The Spadra Basin is a small sub-basin of the larger San Gabriel Valley Groundwater Basin. It is located within the San Jose Creek valley in eastern Los Angeles County. The basin is distinctly bounded by the San Jose Hills to the north and northwest, and the Puente Hills to the south and southwest.

The basin's hydrogeology consists of alluvial deposits from surrounding highlands, with San Jose Creek serving as the primary surface drainage feature flowing westward toward the San Gabriel River. Natural recharge occurs primarily through the percolation of precipitation and surface water runoff from the San Jose Hills and Puente Hills, as well as infiltration from San Jose Creek.

SGMA Compliance and Basin Management

Unlike the Main San Gabriel, Chino, and Six Basins, the Spadra Basin is not adjudicated. Therefore, it is subject to the requirements of SGMA.

DWR has designated the Spadra Basin as a "very low-priority" basin. Under SGMA, very low-priority basins are not legally required to form a Groundwater Sustainability Agency (GSA) or adopt a GSP. However, recognizing the strategic importance of this local supply, WVWD and the City of Pomona proactively entered into a Memorandum of Agreement (included in **Part 3, Appendix N**) to collectively form the Spadra Basin GSA. The GSA has developed a GSP (included in **Part 3, Appendix N**) to comprehensively manage the basin, monitor water quality, and ensure sustainable extractions that prevent chronic lowering of groundwater levels.

Instead of an OSY determined by a Watermaster, the GSP establishes a long-term "Sustainable Yield" for the basin, which is currently estimated at approximately 1,050 AFY (Spadra Basin GSA, 2022). To ensure extractions remain within sustainable limits, the GSP defines specific Sustainable Management Criteria, including Measurable Objectives (MOs) and Minimum Thresholds for groundwater elevations.

Sustainable management practices actively implemented by the GSA include:

- Comprehensive Monitoring: Regular tracking of groundwater levels and water quality to ensure the basin operates within its established MOs and avoids "Undesirable Results" (such as the chronic lowering of groundwater levels or degraded water quality).
- Recharge Optimization: As detailed in **Section 3.9**, the GSA agencies are actively pursuing the Spadra Basin Optimization Project. By utilizing advanced treated recycled water for underground injection, the GSA aims to physically bolster the basin's Sustainable Yield and increase local extraction capacity without causing overdraft.
- Water Quality Management: Collaborating with basin producers (such as Cal Poly Pomona) to implement wellhead treatment for localized VOCs, ensuring existing wells remain operational and do not become stranded assets.

Table 3-11 summarizes the aggregated historical groundwater production from the Spadra Basin by agencies within the TVMWD service area over the 2021–2025 baseline period.

Table 3-11. Historical Groundwater Production from the Spadra Basin by TVMWD Agencies (AFY)

Water Source /Agency	2021	2022	2023	2024	2025	5-Year Average
Participating Agencies	0	0	0	0	0	0
Other TVMWD Agencies*	704	704	704	704	704	704
Regional Total	704	704	704	704	704	704

*Note: To accurately reflect the total regional reliance on the Spadra Basin, this table incorporates estimated groundwater production for Other Member Agencies within the TVMWD service area. Because these agencies are not formal signatories to this 2025 RUWMP, their historical production volumes were estimated utilizing the best available public data, including related environmental documentation and the Spadra Basin GSP.

Projected Supply Methodology

Utilizing the same bottom-up, climate-scaled methodology described for the Main San Gabriel Basin (see **Section 3.2.1**), future local groundwater supplies from the Spadra Basin were projected through 2050. This approach ensures regional consistency while adhering to the management criteria established in the Spadra Basin GSP.

Based on this regional aggregation, extractions from the Spadra Basin are projected to remain consistent at 856 AF in 2030 through 2050. Because these projected volumes align closely with the 2021–2025 historical average (704 AFY) and remain below the basin's estimated Sustainable Yield (approximately 1,050 AFY), this analysis confirms that the projected extractions are plausible and can be sustainably managed within the Spadra Basin GSA's framework. Furthermore, to increase the margin of safety and protect against climate volatility, the GSA agencies are advancing the Spadra Basin Optimization Project (detailed in **Section 3.9**) to inject recycled water and significantly expand the basin's sustainable yield threshold.

TVMWD's Role and Planned Storage Programs

Currently, TVMWD does not hold an active operational storage account in the Spadra Basin. However, expanding the use of the Spadra Basin is a key component of the Region's future mitigation and reliability strategy.

3.2.5. Central Basin

The Central Basin (DWR Basin No. 4-011.04) is a large adjudicated groundwater basin located in the Coastal Plain of Los Angeles, immediately south and southwest of the TVMWD service area. While the Central Basin is not a primary local supply source for the Region, it is included in this RUWMP because it is hydrologically connected to the TVMWD service area through the Main San Gabriel Basin and because two entities operating within the TVMWD service area – Suburban Water Systems and PBWA – hold adjudicated pumping rights within the basin. Within the context of this RUWMP, groundwater extraction from the Central Basin is utilized exclusively by Suburban Water Systems to serve the southwestern portion of its service area, providing approximately 3 percent of the total regional groundwater utilized by agencies within the TVMWD service area.

Physical Characteristics and Hydrogeology

The Central Basin is one of the largest groundwater basins in Los Angeles County, encompassing a surface area of approximately 277 square miles. The basin is a subbasin of the larger Coastal Plain of Los Angeles Groundwater Basin and is bounded on the northeast and east by the Elysian, Repetto, Merced, and Puente Hills, on the southeast by the Los Angeles County–Orange County line (roughly following Coyote Creek), and on the south and west by the Newport-Inglewood fault system and its associated uplift. The Los Angeles River and San Gabriel River drain across the surface of the Central Basin on their way to the Pacific Ocean.

The California Department of Water Resources historically divided the Central Basin into four hydrogeologic divisions: the Los Angeles Forebay, the Montebello Forebay, the Whittier Area, and the

Central Basin Pressure Area. The two forebays contain unconfined aquifers with relatively interconnected water-bearing strata extending up to 1,600 feet deep, providing the primary pathways for recharge to the deeper aquifer system. The Whittier Area and Pressure Area are predominantly confined aquifer systems consisting of permeable sands and gravels separated by semi-permeable to impermeable clay layers extending to approximately 2,200 feet below the surface. The principal water-producing formations are the Lakewood Formation and the San Pedro Formation. Total storage capacity of the basin is estimated to be approximately 13.8 million AF.

The hydrologic connection between the Central Basin and the TVMWD service area is significant: the Montebello Forebay receives both surface and subsurface inflow from the Main San Gabriel Basin through a gap in the Merced and Puente Hills at Whittier Narrows. This gap provides the primary conduit through which outflows from the TVMWD region's largest groundwater basin – including the replenishment water delivered by TVMWD to the Main San Gabriel Basin's spreading grounds – ultimately reach and recharge the Central Basin.

Adjudication and Basin Management

The Central Basin was adjudicated in 1965 (*Central and West Basin Water Replenishment District v. Charles E. Adams et al.*). The original Judgment was entered on October 11, 1965, and appointed DWR as Watermaster. The Judgment has been amended three times since its inception: the First Amended Judgment (1980) transitioned the administrative year from a water year to a fiscal year basis (July 1 through June 30); the Second Amended Judgment (1991) modified carryover and overproduction provisions; and, most significantly, the Third Amended Judgment was entered on December 23, 2013, substantially modernizing basin governance and establishing provisions for groundwater storage (Third Amended Judgment included in **Part 3, Appendix T**.

Under the Third Amended Judgment, the Central Basin Watermaster is composed of three separate bodies with distinct responsibilities:

- The **Administrative Body**: WRD serves as the court-appointed Administrative Body, responsible for the administration and enforcement of the Judgment, including accounting and reporting functions related to groundwater extractions, carryover, and storage.
- The **Water Rights Panel**: Composed of seven Central Basin water rights holders, the Panel has exclusive authority to enforce adjudicated extraction rights and manage the Exchange Pool.
- The **Storage Panel**: Composed of the Water Rights Panel and the WRD Board of Directors, the Panel reviews and approves groundwater storage projects within the basin.

Unlike the Main San Gabriel and Six Basins, which utilize an annually determined OSY that fluctuates based on real-time hydrological conditions, the Central Basin operates under fixed Allowed Pumping Allocations (APAs). Each party's APA represents 80 percent of its court-adjudicated Total Water Right. Parties are permitted to carry over unused pumping rights (up to 60 percent of their APA) into the following administrative year and may extract up to 140 percent of the sum of their APA and leased water in any given year, provided they have sufficient carryover or stored water balances. Over-

extractions by parties without stored water are limited to the greater of 20 percent of their APA or 20 AF.

The Third Amended Judgment also established formal provisions for groundwater storage in the Central Basin for the first time, designating an Adjudicated Storage Capacity of 220,000 AF. This storage capacity is apportioned between Individual Storage Accounts – sized at 50 percent of each party's APA – and a Community Storage Pool available on a first-come, first-served basis. Additionally, the Judgment established the Regional Disadvantaged Communities Incentive Program, which reserves up to 23,000 AF of the Community Storage Pool for the use or benefit of DACs within the Central Basin.

Groundwater replenishment in the Central Basin is managed by the Water Replenishment District of Southern California (WRD), which purchases imported water from MWD and recycled water from the Los Angeles County Sanitation Districts (LACSD) for recharge at the Montebello Forebay spreading grounds. WRD also manages the Alamitos Gap, Dominguez Gap, and West Coast Basin Barrier injection well projects to prevent seawater intrusion into the basin's coastal aquifers.

Table 3-12 summarizes the aggregated historical groundwater production from the Central Basin by retail agencies within the TVMWD service area over the 2021–2025 baseline period.

Table 3-12. Historical Groundwater Production from the Central Basin by TVMWD Agencies (AFY)

Water Source / Agency	2021	2022	2023	2024	2025	5-Year Average
Participating Agencies	0	0	0	0	0	0
Other TVMWD Agencies*	1,543	1,151	1,118	2,253	2,728	1,759
Regional Total	1,543	1,151	1,118	2,253	2,728	1,759

*Note: To accurately reflect the total regional reliance on the Spadra Basin, this table incorporates estimated groundwater production for Other Member Agencies within the TVMWD service area. Because these agencies are not formal signatories to this 2025 RUWMP, their historical production volumes were estimated utilizing the best available public data, including Central Basin Watermaster Annual Reports published by WRD.

3.2.6. Puente Basin

The Puente Basin is a small, adjudicated groundwater basin located in eastern Los Angeles County, directly beneath the southern portion of the TVMWD service area. Unlike the Central Basin described in the preceding section, the Puente Basin lies entirely within the Region's geographic footprint and is actively managed by the PBWA. Groundwater within the Puente Basin is currently utilized exclusively for non-potable purposes, primarily recycled water distribution blending by Rowland Water District. While extraction volumes are small relative to the Region's other basins (approximately 1 percent of the total regional groundwater), the Puente Basin represents a strategically important local resource that PBWA is actively working to develop through a comprehensive Groundwater Management Plan.

Physical Characteristics and Hydrogeology

The Puente Basin spans approximately 20 square miles and is situated in a narrow alluvial valley between the San Jose Hills to the north and the Puente Hills to the south. The basin shares its eastern boundary with the Spadra Basin (described in **Section 3.2.4**) and its western boundary with the Main San

Gabriel Basin (described in **Section 3.2.1**). San Jose Creek, the basin's primary surface drainage feature, flows through the basin from northeast to west, ultimately passing through Whittier Narrows into the Central Basin (described in **Section 3.2.5**).

The basin's water-bearing formations consist of alluvial deposits along the San Jose Creek valley. Natural recharge occurs primarily through the percolation of precipitation and infiltration of surface water runoff from the surrounding San Jose Hills and Puente Hills. The basin also receives subsurface inflow from the adjacent Spadra Basin to the east.

Three water districts overlie the Puente Basin boundary: Walnut Valley WD, Rowland WD, and the Upper San Gabriel Valley Municipal Water District. The basin is sandwiched between the TVMWD service area's other groundwater resources and lies along the path of San Jose Creek's westward flow, making it a critical hydrologic link in the broader regional groundwater system. The Puente Narrows Agreement, established in connection with the 1973 Main San Gabriel Basin adjudication, governs subsurface outflow from the Puente Basin into the Main San Gabriel Basin, and the 1965 Long Beach Judgment guarantees the Central and West Coast Basins an average annual water supply through Whittier Narrows that includes underflow from the Puente Basin.

Adjudication and Basin Management

The Puente Basin was adjudicated in 1985. The Judgment (included in **Part 3, Appendix U**) established the legal framework for groundwater extraction rights within the basin and recognized the basin's hydrologic connections to the adjacent Main San Gabriel and Central Basins through the Puente Narrows Agreement (included in **Part 3, Appendix U**.

Because the Puente Basin is adjudicated, it is exempt from the requirement to form a GSA or adopt a GSP under SGMA. Basin management is instead governed by the terms of the Judgment and administered through PBWA in coordination with the Upper San Gabriel Valley Municipal Water District.

Recognizing the strategic value of this local resource, PBWA is currently developing a voluntary Groundwater Management Plan (GMP) to guide the future management and beneficial use of the Puente Basin. As part of this effort, PBWA has completed several technical memoranda, including TM-1: Conceptual Understanding of the Puente Basin (PBWA, 2023); TM-2: Goals and Concepts for Improved Basin Management memorandum (PBWA, 2024a); and TM-3: Basin Management Alternatives analysis (PBWA, 2025). PBWA has conducted stakeholder meetings throughout 2024 and 2025 to solicit input on the GMP's development, with the stated objective of maximizing the beneficial use of the basin in a conjunctive manner with the Region's other water resources — including imported water from TVMWD, treated recycled water from LACSD, and groundwater from adjacent basins.

Current Groundwater Use

Groundwater within the Puente Basin is currently impaired by water quality constraints that limit its use to non-potable applications. Rowland WD operates a well within the Puente Basin that produces impaired groundwater for blending into its recycled water distribution system. This groundwater, along with treated water captured from an EPA Superfund cleanup project and recycled water purchased from

LACSD (via the San Jose Creek Water Reclamation Plant), supports Rowland WD's extensive non-potable recycled water program.

3.2.7. Groundwater Quality Impacts on Reliability

Groundwater quality in the Region is generally sufficient to meet municipal demands, provided that appropriate wellhead treatment and blending strategies are employed. The Participating Agencies and local Watermasters continuously monitor groundwater quality in accordance with the State Water Resources Control Board (SWRCB) DDW regulations and the Groundwater Ambient Monitoring and Assessment (GAMA) Program.

While local groundwater is a highly reliable source in terms of volume, its usability is constrained by historical land-use practices. Decades of agricultural, industrial, and military activities have introduced various contaminants into the underlying aquifers of the Main San Gabriel, Chino, Six Basins, Spadra, Central, and Puente basins. When wells exhibit contaminant levels exceeding the Maximum Contaminant Levels (MCLs) or Notification Levels set by DDW, they must be removed from service until treatment is installed or blending plans are approved.

Primary Contaminants of Concern

Groundwater from the Region's basins has historically exhibited exceedances for several constituents. The most prevalent contaminants requiring active management include:

- Volatile Organic Compounds (VOCs): Chemicals such as Tetrachloroethene (PCE) and Trichloroethene (TCE) are widely present, primarily resulting from legacy industrial and aerospace manufacturing in the San Gabriel Valley.
- Nitrates and Total Dissolved Solids: Elevated levels of nitrates and salts are particularly prevalent in the Chino Basin and portions of the Six Basins, stemming from historical agricultural operations, dairy farming, and the use of imported water and recycled water for recharge.
- Perchlorate: A chemical used in rocket fuel and flares, perchlorate has impacted groundwater wells in several areas, requiring specialized ion-exchange treatment.
- Contaminants of Emerging Concern (CECs) and PFAS: Per- and polyfluoroalkyl substances (PFAS) are man-made chemicals used in fire-retardant foams and consumer products. As DDW establishes strict new Public Health Goals and MCLs for PFAS (specifically PFOA and PFOS), many agencies in the Region are being forced to take wells offline and rapidly design and construct new GAC or ion-exchange treatment facilities.
- Other Constituents: 1,2,3-Trichloropropane (1,2,3-TCP), Hexavalent Chromium, Arsenic, 1,2-Dibromo-3-chloropropane (DBCP), and naturally occurring Uranium.

Table 3-13 describes the primary groundwater contaminants of concern in the Region.

Table 3-13. Primary Groundwater Contaminants and Regional Treatment Strategies

Contaminant of Concern	Primary Source / Cause	Typical Treatment Technology Utilized in Region	Impacted Basins (General)
VOCs (PCE, TCE)	Legacy industrial and aerospace manufacturing	Granular Activated Carbon (GAC), Air Stripping	Main San Gabriel, Spadra, Six Basins
Nitrates	Historical agriculture, dairy farming, fertilizers	Blending, Anion Exchange, Reverse Osmosis (RO)	Chino Basin, Six Basins
TDS (Salinity)	Agricultural runoff, imported/recycled water recharge	Reverse Osmosis (Desalters)	Chino Basin
Perchlorate	Rocket propellants, flares, explosives	Ion Exchange (IX)	Main San Gabriel, Six Basins
PFAS / PFOA	Fire-fighting foams, industrial consumer products	Granular Activated Carbon (GAC), Ion Exchange	Region-wide
1,2,3-TCP	Legacy agricultural soil fumigants	Granular Activated Carbon (GAC)	Chino Basin, Six Basins

Known Contaminant Plumes and Basin-Specific Quality

The distribution of these contaminants varies by basin:

Main San Gabriel Basin: The EPA designated portions of the San Gabriel Valley as Superfund sites due to extensive VOC contamination. Major groundwater cleanup projects, such as the Baldwin Park Operable Unit (BPOU), utilize large-scale extraction and advanced treatment facilities to contain the migration of these plumes, remove VOCs and perchlorate, and provide treated water for municipal supply.

Chino Basin: The Chino Basin faces significant challenges with TDS and nitrates. The Chino Basin Watermaster's OBMP includes the operation of regional groundwater desalters to extract and treat this degraded water, preventing the migration of poor-quality water into cleaner areas of the basin and producing potable supply.

Six Basins and Spadra Basin: Localized VOC and nitrate contamination impacts wells in these basins. Because groundwater produced from the Spadra Basin frequently requires extensive wellhead treatment or blending to comply with SWRCB-DDW drinking water standards, it is currently utilized primarily to meet non-potable overlying demands by local water agencies. To overcome these constraints and restore potable capacity, agencies are actively investing in remediation. For example, as noted in the TVMWD's WRMP (TVMWD, 2025), Cal Poly Pomona is pursuing VOC treatment at its Well No. 2 within the Spadra Basin to restore its capacity to produce potable water.

Central Basin and Puente Basin: The Central Basin faces water quality challenges common to the greater Coastal Plain of Los Angeles, including localized saltwater intrusion along its coastal margins and legacy contamination from industrial activities. WRD manages basin-wide water quality monitoring and replenishment using recycled water and imported water. The Puente Basin contains impaired groundwater that currently limits extraction to non-potable uses by Rowland WD. PBWA is actively

evaluating wellhead treatment options through its ongoing Groundwater Management Plan development process to potentially restore potable extraction capacity in the future.

Impact on Supply Reliability

Groundwater quality degradation has a direct and severe impact on the Region's water supply reliability. When local wells are shut down due to contamination (referred to in the WRMP as "stranded assets"), retail agencies lose their ability to pump their adjudicated groundwater rights. To replace this lost local supply, agencies are forced to increase their purchases of imported water from TVMWD. This dynamic shifts the burden to the imported water system, precisely when the Region is attempting to reduce its reliance on imported water due to drought and climate change vulnerabilities.

To break this cycle, TVMWD and the Participating Agencies have prioritized regional mitigation projects focused on water quality treatment. For example, the proposed GRIP+ project - a major regional partnership between TVMWD, the City of Glendora, and the City of Pomona – and City of Pomona Groundwater Quality Improvement project (described in Section 3.9) involve installing wellhead treatment (such as GAC for TCP and anion exchange for nitrates) to rehabilitate stranded wells. By investing in groundwater treatment, the Region can restore local extraction capacity, fully utilize its groundwater basin storage, and secure a drought-resilient water portfolio.

Stranded Groundwater Assets and Evolving Regulations

As detailed above, the Region overlies several historic contaminant plumes (VOCs, perchlorate, nitrates). While many of these legacy plumes are actively managed, the Region faces a significant, ongoing reliability threat from "moving regulatory targets" – specifically, the introduction of stricter MCLs for CECs.

For example, the EPA issued final National Primary Drinking Water Regulations for several PFAS compounds in April 2024 (EPA, 2024), and the SWRCB DDW continues to tighten state-level Public Health Goals and MCLs. When these new, ultra-low regulatory thresholds take effect, wells that previously met all safety standards instantly become non-compliant. These wells must be taken offline, creating "stranded assets."

3.3. Surface Water

While imported water and groundwater form the foundation of the Region’s water portfolio, local surface water provides a valuable, highly cost-effective supplemental supply. Between 2021 and 2025, local surface water use by TVMWD member agencies averaged 2,267 AFY, accounting for approximately 2 percent of the Region’s total water supply portfolio.

Surface water within the Region is primarily utilized in two ways: direct diversion for potable treatment and distribution, and diversion into spreading grounds for groundwater basin replenishment. Because surface water flows are entirely dependent on local precipitation and snowpack in the San Gabriel Mountains, this supply is highly variable and susceptible to drought conditions.

3.3.1. Surface Hydrology and Major Sources

The surface hydrology of the Region is dominated by the San Gabriel Mountains to the north, which capture precipitation and generate runoff that flows southward into the valley floors. The Region spans portions of two major watersheds: the San Gabriel River watershed to the west and the Santa Ana River watershed (via San Antonio Creek) to the east.

San Gabriel River

The San Gabriel River is the primary surface water system serving the western portion of the TVMWD service area. The river's headwaters originate in the Angeles National Forest. Runoff is captured and regulated by a series of upstream dams (including Cogswell, San Gabriel, and Morris Dams) before flowing downstream into the Main San Gabriel Basin. Flows in the San Gabriel River are highly variable, with the majority of natural runoff occurring during the winter storm season (December through March).

San Antonio Creek

San Antonio Creek serves the eastern portion of the Region. Originating near Mount San Antonio (Mt. Baldy), the creek flows southward through San Antonio Canyon. Flows are regulated by the San Antonio Dam, a flood control facility operated by the U.S. Army Corps of Engineers. Below the dam, the creek flows into the Six Basins and Chino Basin areas, where it is utilized for both direct supply and groundwater recharge.

3.3.2. Surface Water Diversions and Management

Unlike its role with imported water, TVMWD does not own surface water rights or operate self-supplied surface water diversion facilities to meet regional water demands. Instead, surface water rights are held and managed by specific retail member agencies and mutual water companies within the Region.

Key surface water management activities in the Region include:

- Covina Valley Water Company: Formed through the merger of the Covina Irrigating Company and Valencia Heights Water Company, CVWC is a TVMWD member agency that holds pre-1914 appropriative rights to divert surface water from the San Gabriel River. These surface water rights are legally administered and apportioned through CVWC's membership in the San Gabriel River Water Committee (historically known as the "Committee of Nine" established by the 1889 Compromise Agreement) (documentation of the pre-1914 rights are included in **Part 3, Appendix O**). CVWC treats this local surface water (along with untreated imported water from TVMWD) at its William B. Temple Treatment Plant before supplying it to member agencies within the TVMWD region. Based on historical data from 2015 to 2022, CVWC diverts an average of 1,135 AFY of local surface water from the San Gabriel River.
- City of Pomona: The City of Pomona holds pre-1914 appropriative rights (included in **Part 3, Appendix P**) to local surface water from San Antonio Creek and its local tributary watersheds (such as Evey Canyon). These surface water rights are shared with the San Antonio Water

Company via a diversion structure located upstream of the San Antonio Dam. Crucially, the 1998 Six Basins Adjudication Judgment explicitly reaffirmed the City of Pomona's right to continue harvesting this surface water for direct municipal use, independent of the basin's groundwater recharge obligations. The City diverts this water and treats it at the Pedley Filtration Plant, located in the City of Claremont, for potable use. Based on historical data from 2021 to 2025, Pomona diverts an average of 1,481 AFY of local surface water from the San Gabriel River.

- TVMWD Recharge Operations: While TVMWD does not directly serve surface water to customers, it actively participates in the management of these flows to maximize regional groundwater storage. For example, TVMWD purchases San Antonio Creek surface water supplies from the City of Pomona to replenish the Six Basins. TVMWD also utilizes interconnections, such as Pomona's Canon pipeline, to direct surface water to the San Antonio Spreading Grounds, directly benefiting TVMWD's groundwater extraction wells located in the Six Basins.

3.3.3. Surface Water Quality and Climate Impacts

Because the TVMWD service area straddles a major hydrological divide, surface water quality is governed by two separate regulatory frameworks:

- San Gabriel River Watershed: Governed by the SWRCB Plan for the Los Angeles Region (Region 4 Basin Plan) (LARWQCB, 2014).
- San Antonio Creek Watershed: Governed by the SWRCB Plan for the Santa Ana River Basin (Region 8 Basin Plan) (SARWQCB, 2025).

These Basin Plans establish the beneficial use designations and water quality objectives for the Region's surface waters. Because the Participating Agencies divert surface water from the high-elevation, upper portions of these watersheds (upstream of major urban development), the ambient water quality is generally excellent and free of the urban runoff contaminants, industrial discharges, and 303(d) impairments that typically affect the lower reaches of these river systems.

Source-Specific Quality and Treatment

While free of most industrial contaminants, local surface water is directly exposed to the natural environment and requires conventional treatment (coagulation, flocculation, sedimentation, filtration, and disinfection) to meet state and federal drinking water standards.

- San Gabriel River: Water diverted by the CVWC from the San Gabriel River is characterized by low TDS and high historical purity. CVWC treats this water at its William B. Temple Treatment Plant.
- San Antonio Creek: Water diverted by the City of Pomona from San Antonio Creek originates as mountain snowmelt and runoff from Mount San Antonio. It is treated at the City's Pedley Filtration Plant in Claremont.

The primary water quality challenge for both of these sources is turbidity (suspended sediment and organic matter) driven by weather events. During dry periods, the water is clear and easily treated. However, during intense winter storms, rapid runoff causes severe spikes in turbidity. When turbidity levels exceed the operational thresholds of the filtration plants, agencies are forced to temporarily halt diversions and bypass the storm flows until the water clears, resulting in a loss of potential supply. **Table 3-14** describes the primary surface water quality challenges and concerns in the Region.

Table 3-14. Primary Surface Water Quality Challenges and Operational Impacts

Water Quality Challenge	Primary Source / Cause	Impact on Supply Reliability	Typical Mitigation / Treatment Strategy
Turbidity (Suspended Solids)	Heavy winter rainstorms, rapid snowmelt	High Nephelometric Turbidity Unit (NTU) levels can blind filters; forces temporary shutdown of diversion facilities.	Conventional filtration; temporary bypass of high-flow storm events.
Total Organic Carbon (TOC)	Natural decay, post-wildfire ash	Acts as a precursor for DBPs when chlorinated.	Enhanced coagulation; careful management of chlorine dosing; blending with imported water.
Ash and Debris Loads	Post-wildfire runoff from the San Gabriel Mountains	Can physically damage intakes and severely degrade raw water quality for extended periods.	Watershed management; installation of protective intake screens; temporary reliance on groundwater/imported water.
Pathogens (Giardia, Cryptosporidium)	Wildlife and natural environmental exposure	Requires strict compliance with the Surface Water Treatment Rule.	Multi-barrier treatment (Filtration + UV or Chlorine disinfection).

Climate Change and Wildfire Impacts

Because local surface water supplies are directly tied to precipitation, they are highly vulnerable to the impacts of climate change. As discussed in **Section 2.5.2**, TVMWD's 2024 Climate Assessment modeled a "Dry Hot" (Drier with Extreme Warming) scenario against historical baselines (TVMWD, 2024a). As part of that Climate Assessment, projected changes in streamflow were modeled for the San Gabriel River

(specifically below Santa Fe Dam near Baldwin, USGS Gage 11085000) through the year 2045 (USGS, 2026).

The modeling revealed several critical vulnerabilities for the Region's surface water supplies:

- Reduction in Total Flow: Under the Dry Hot scenario, annual streamflow in the San Gabriel River is projected to decrease by 10 percent by 2045 relative to the current climate.
- Shift in Seasonal Timing: The hydrograph of the river is expected to shift significantly. Lower flows are projected during the historically high-flow months of February and March (decreasing by 20 to 21 cubic feet per second [cfs]), while precipitation shifts slightly earlier into the fall.
- Increased Intensity and Shorter Seasons: The Region is projected to experience a shorter overall rainy season, but with the potential for higher-intensity storm events. This results in higher peak flows of shorter duration.

These hydrologic shifts dictate that river supplies will become less reliable for direct diversion. While natural groundwater recharge will still occur, the shifting timing and increased intensity of storm flows mean that existing diversion facilities and spreading grounds may face capacity constraints during flash-flood events. Consequently, the Region must adapt its surface water management strategies to ensure diversion facilities can capture and recharge these higher-intensity, higher turbidity, and shorter-duration flows before they are lost downstream.

3.4. Stormwater

Within the TVMWD service area, other than the surface water described in the prior section, stormwater is not directly diverted for potable use; rather, stormwater capture is a component of the Region’s conjunctive use and groundwater management strategy. The capture and percolation of local stormwater runoff is the primary mechanism for the natural replenishment of the Main San Gabriel, Six Basins, Chino, and Spadra groundwater basins. The volume of stormwater captured directly influences the OSY of these adjudicated basins, which in turn supports the local groundwater extraction totals detailed in **Section 3.2.**

3.4.1. Regional Stormwater Capture Facilities

Because TVMWD is a wholesale agency, it does not own or operate stormwater capture or flood control infrastructure. Stormwater capture is managed through highly coordinated partnerships with regional flood control districts and local protective associations. These entities operate networks of dams, diversion structures, and spreading grounds designed to capture stormwater runoff and percolate it into the underlying aquifers.

Key stormwater capture facilities benefiting the Region include:

- Santa Fe Spreading Grounds (Main San Gabriel Basin): Operated by the Los Angeles County Department of Public Works (LACDPW), this facility captures runoff from the San Gabriel River watershed. Located in the upper portion of the Santa Fe Dam reservoir, the spreading grounds

utilize a rubber dam to direct river flows into percolation basins, capable of percolating approximately 400 cfs continuously.

- Peck Road Water Conservation Park (Main San Gabriel Basin): Operated by the LACDPW, this facility captures stormwater runoff from the San Gabriel River and Arcadia Wash watersheds. Functioning as both a recreational park and a critical water conservation asset, the facility utilizes a large primary lake and interconnected percolation basins to detain high-velocity storm flows. Impounding this water prevents it from bypassing the local groundwater system, instead allowing it to slowly infiltrate through highly permeable soils into the underlying Main San Gabriel Basin, actively supporting the Region's groundwater replenishment objectives.
- San Antonio and Thompson Creek Spreading Grounds (Six Basins / Chino Basin): Owned and managed by the Pomona Valley Protective Association (PVPA) in coordination with the U.S. Army Corps of Engineers and local Watermasters. Spanning approximately 1,000 acres, these facilities capture stormwater rushing out of San Antonio Canyon. Water impounded behind the San Antonio Dam is discharged in a controlled manner into PVPA diversion works, which utilize slide gates to divert high-velocity stormwater into gravel pits and channels for groundwater recharge.

Table 3-15 summarizes the primary stormwater capture and spreading facilities that support the Region's groundwater basins.

Table 3-15. Major Stormwater Capture and Spreading Facilities Benefiting the Region

Facility Name	Managing/Operating Entity	Primary Source Water	Primary Basin(s) Recharged
Santa Fe Spreading Grounds	Los Angeles County Dept. of Public Works (LACDPW)	San Gabriel River	Main San Gabriel Basin
San Antonio Spreading Grounds	Pomona Valley Protective Association (PVPA) / USACE	San Antonio Creek	Six Basins, Chino Basin
Thompson Creek Spreading Grounds	PVPA / LACDPW	Thompson Creek	Six Basins
Peck Road Water Conservation Park	Los Angeles County Dept. of Public Works	San Gabriel River / Arcadia Wash	Main San Gabriel Basin

3.4.2. Climate Change Vulnerabilities and Planned Improvements

As described in the Region's Climate Change Vulnerability Assessment (Section 2.5), local hydrology is projected to shift (TVMWD, 2024a). While the total volume of annual precipitation may not decrease drastically by 2050, projections show that the timing and intensity of that precipitation will.

The Region is projected to experience a shorter rainy season characterized by more severe, high-intensity "atmospheric river" events. This volatility poses a direct threat to stormwater capture: existing diversion facilities and spreading grounds may face capacity constraints during flash-flood events, resulting in vital water supplies bypassing the spreading grounds and being lost to the ocean.

To mitigate this climate vulnerability, the Region is actively investing in infrastructure enhancements to increase the instantaneous capture capacity of local spreading grounds. These enhancements are described in more detail in **Section 3.9**.

3.5. Recycled Water and Wastewater

The development and utilization of recycled water is a critical strategy for the Region. Although implementing recycled water infrastructure requires significant capital investment, the supply is highly reliable because wastewater flows to treatment plants remain relatively constant regardless of hydrologic conditions. For this reason, recycled water is often considered a "drought-proof" supply.

Based on historical water use from 2021 to 2025, recycled water accounts for approximately 4 percent of the Region's total water supply portfolio, providing an average of 6,224 AFY. Currently, TVMWD does not directly use or have access to recycled water at the wholesale level. Instead, several member agencies within the TVMWD service area utilize recycled water to meet non-potable demands, primarily for landscape irrigation and industrial uses.

3.5.1. Wastewater Collection and Treatment

To understand the potential for recycled water, it is necessary to quantify the wastewater generated and treated within the Region. Neither TVMWD nor the majority of its Participating Agencies provide wastewater collection or treatment services. Instead, wastewater collection and treatment within the Region is primarily managed by LACSD, along with local municipal sewer departments that maintain the collection pipelines conveying wastewater to LACSD's trunk sewers.

Recycled water sources in the Region are primarily derived from two LACSD-owned and operated water reclamation plants (WRPs):

- Pomona WRP: Located within the City of Pomona, this facility treats wastewater generated by residential and commercial users in the eastern portion of the Region. The Pomona WRP provides primary, secondary, and tertiary treatment for a design capacity of 15 MGD.
- San Jose Creek WRP: Located adjacent to the City of Industry, this larger facility serves a broader area of the San Gabriel Valley. The San Jose Creek WRP consists of two hydraulically interconnected facilities (East and West) that provide primary, secondary, and tertiary treatment for a combined design capacity of 100 MGD.

Table 3-16 summarizes the existing wastewater collection and treatment facilities serving the Region.

Table 3-16. Wastewater Treatment Plants Serving the Region

Facility Name	Operating Agency	Treatment Level	Design Capacity (MGD)	2025 Average Daily Flow (MGD)	Effluent Use
Pomona WRP	LACSD	Tertiary	15	6.85	Non-potable reuse for irrigation; remaining discharged to San Jose Creek[1].
San Jose Creek WRP	LACSD	Tertiary	100	60.1[2]	Non-potable reuse; groundwater recharge; remaining discharged to San Gabriel River[3].

1. Under SWRCB Wastewater Change Petition WW0104 (SWRCB, 2020a) (included in **Part 3, Appendix Q**), LACSD is legally permitted to reduce its discharge to San Jose Creek to zero to maximize recycled water reuse, meaning there are no minimum bypass flow obligations for downstream habitat.
2. Source: Sewerage Service "Will Serve" Documentation. As published in recent regional CEQA filings (e.g., City of Irwindale Final IS/MND, January 2025) (City of Irwindale, 2025).
3. Under SWRCB Wastewater Change Petition WW0107 (SWRCB, 2020b) (included in **Part 3, Appendix R**), LACSD is authorized to significantly reduce discharges to expand regional reuse. However, this authorization is subject to specific, enforceable minimum flow conditions negotiated with the SWRCB and California Department of Fish and Wildlife (e.g., maintaining ~5 MGD at specific outfalls) to protect downstream habitat and public trust resources.

3.5.2. Current Recycled Water Uses

While TVMWD does not distribute recycled water, six member agencies within the Region – the City of Pomona, Rowland WD, WVWD, Cal Poly Pomona, Mt. SAC, and the City of Industry – currently utilize tertiary-treated recycled water purchased from LACSD to offset potable water demands. This water is distributed through dedicated "purple pipe" systems and is primarily used for irrigation of parks, golf courses, schools, and roadway medians. Recycled water from LACSD is acquired by the Participating Agencies through individual service agreements rather than formal adjudicated entitlements. The total available recycled water supply is governed by the treatment capacity of LACSD's two regional WRPs – the Pomona WRP (15 MGD capacity) and the San Jose Creek WRP (100 MGD capacity) – as documented in Section 3.5.1.

The City of Pomona, Rowland WD, and WVWD are the largest utilizers of recycled water among the Participating Agencies. Furthermore, institutional partners such as Cal Poly Pomona utilize significant volumes of recycled water for campus landscaping and agricultural operations.

Table 3-17 summarizes the aggregated historical recycled water use by TVMWD agencies over the 2021–2025 baseline period.

Table 3-17. Historical Annual Recycled Water Use by TVMWD Agencies (2021-2025)

Water Source / Agency	2021	2022	2023	2024	2025	5-Year Average
Participating Agencies	4,566	4,972	3,939	3,593	3,430	4,100
Other TVMWD Agencies*	2,126	2,126	2,126	2,126	2,126	2,126
Regional Total	6,682	7,098	6,065	5,719	5,555	6,226

*Note: To accurately reflect the total regional recycled water use, this table incorporates estimated recycled water use for Other Member Agencies within the TVMWD service area. Because these agencies are not formal signatories to this 2025 RUWMP, their historical recycled water use were estimated utilizing the best available public data, including related environmental documentation (e.g., EIRs) and 2020 UWMPs.

3.5.3. Planned Recycled Water Projects

The Region is actively exploring opportunities to expand the beneficial use of recycled water to further reduce dependence on imported water supplies. While expanding traditional "purple pipe" non-potable systems is ongoing, the Region is also investigating advanced purification and groundwater injection strategies. More detail is provided in **Section 3.9**.

3.6. Transfers and Exchanges

To maximize the reliability and efficiency of the Region's water supply, TVMWD and its Participating Agencies actively utilize transfers and exchanges. These water management strategies allow the Region to optimize existing resources, overcome localized water quality or infrastructure constraints, and ensure that water can be moved to where it is needed most, particularly during extended drought periods or emergency outages. While TVMWD serves as the primary conduit for importing water into the Region, the retail agencies themselves possess a highly interconnected distribution network. By leveraging joint powers authorities, shared pipelines, and cooperative agreements, the agencies can physically and contractually exchange water supplies.

Water transfers and exchanges involve the temporary or long-term trading of water rights or physical water supplies between agencies. In the TVMWD service area, these exchanges are facilitated by both physical interconnections and contractual agreements.

Existing Exchange Mechanisms and Infrastructure

A critical component of the Region's transfer capability is the Pomona-Walnut-Rowland JWL. The JWL is a shared transmission pipeline – not a standalone water right or active supply transfer program – that allows for the efficient movement of treated imported water (described in **Section 3.1**) among the City of Pomona, Rowland WD, and WVWD. While it does not currently generate 'new' supply, the JWL's physical interconnection makes future regional exchanges possible. For example, the planned Chino Basin Conjunctive Use Exchange (described in **Section 3.9**) relies entirely on the JWL to physically wheel Pomona's extracted groundwater westward to offset other agencies' imported water demands.

Additionally, the PBWA acts as a legal and administrative vehicle for executing water transfers, securing groundwater export rights, and developing shared infrastructure that benefits both districts. While the PBWA does not generate ‘new’ supply, it utilizes its authority to optimize regional reliability by banking

surplus water in the Main San Gabriel Basin (described in **Section 3.2.1**) and facilitate external surface water transfers, such as the planned partnership with the Covina Valley Water Company (described in **Section 3.9**).

In addition to these specific regional projects, TVMWD and the Participating Agencies continue to maintain emergency interties with neighboring systems to facilitate short-term transfers during facility outages or localized supply disruptions.

3.7. Supply From Storage

A foundational pillar of the Region's water supply reliability is the proactive management of local groundwater basins through "conjunctive use." Conjunctive use is the strategic practice of storing imported surface water in local groundwater aquifers during wet years when supplies are abundant, and subsequently extracting that stored water during dry years when imported supplies are constrained.

This regional "water banking" strategy acts as a critical buffer, allowing the Participating Agencies to maintain sufficient supply to meet demands during single-dry and multi-year drought conditions without triggering severe mandatory rationing.

It is important to note that 'Supply from Storage' is not quantified as an independent, separate line item in the regional supply projections presented in **Section 5**. Because the Region actively practices conjunctive use, the withdrawal of banked water is physically realized through increased local well production during droughts. Therefore, the yields from the storage accounts detailed in this section are implicitly embedded within the regional 'Local Groundwater' supply totals. Listing storage as a separate supply source would result in an inaccurate double-counting of the Region's available water assets.

3.7.1. TVMWD Regional Storage Capacity and MWD Cyclic Storage

TVMWD actively manages changes in annual water supply availability by utilizing storage accounts across multiple adjudicated basins. Across the Main San Gabriel, Six Basins, and Chino Basins, TVMWD has a combined authorized storage capacity of 54,890 AF.

A primary mechanism for utilizing this capacity is the Cyclic Storage Program established with MWD. Under this program, MWD delivers imported water supplies to TVMWD for storage in advance of demand. This allows the Region to capture surplus imported supplies that would otherwise be lost to the ocean during high-precipitation years. TVMWD's Cyclic Storage Agreement with MWD (included in **Part 3, Appendix K**) allows for the pre-delivery and storage of up to 50,000 AF. Originally signed in 1991, this agreement was recently amended and extended through June 2034, ensuring long-term contractual reliability for the Region's banking operations.

MWD Chino Basin Conjunctive Use Program (Dry-Year Yield Program)

In addition to cyclic storage accounts, TVMWD is a signatory partner in MWD's Chino Basin Conjunctive Use Program (regionally referred to as the Dry-Year Yield Program, or DYYP). Executed in June 2003 in partnership with MWD, the Inland Empire Utilities Agency (IEUA), and the Chino Basin Watermaster, this

program is one of the largest active groundwater banking operations in Southern California (MWD et al., 2003) (Agreement provided in **Part 3, Appendix T**).

The DYYP provides a maximum authorized storage capacity of 100,000 AF within the Chino Basin, with a designed dry-year extraction yield of up to 33,000 AF per year. Under this arrangement, MWD stores surplus imported water in the Chino Basin during hydrologically wet periods using Proposition 13 state grant funds and MWD capital.

During severe droughts or periods of imported supply constraint, MWD can "call" on this stored water. To execute the call, local participating pumpers extract the banked groundwater in lieu of taking treated imported water deliveries from MWD. This in-lieu exchange effectively frees up MWD's regional surface water supplies, reduces TVMWD's imported water demand during critical shortage years, and provides a highly reliable local buffer against SWP allocation cuts. Operating under an initial 25-year term (through 2028, with provisions for renewal or extension), the DYYP serves as a foundational component of the Region’s drought resilience strategy and illustrates the collaborative, conjunctive management required to navigate prolonged dry periods.

By the end of 2025, TVMWD is projected to hold approximately 14,000 AF of water in storage across its accounts. **Table 3-18** summarizes the Region's aggregated groundwater storage portfolio, delineating between wholesale accounts managed by TVMWD and retail accounts managed by Joint Power Authorities (such as PBWA).

Table 3-18. TVMWD Regional Groundwater Storage Portfolio Summary

Groundwater Basin	Agreement Type	Maximum Storage Capacity (AF)	Estimated Stored Balance (End of 2025) (AF)
Wholesale Storage			
Main San Gabriel Basin	Cyclic Storage Agreement	50,000	3,079
Six Basins	Operational Storage Account	3,500	~3,500[1]
Chino Basin	One-Time Storage Agreement	1,390	1,390
Spadra Basin	Planned Optimization Project	0 (Planned: 3,500)	0
Wholesale Subtotal		54,890 (Current) 58,390 (Current and Planned)	~7,969
Retail / JPA Storage			
Main San Gabriel Basin	Storage and Export Agreement	30,000	3,000[2]
Retail / JPA Subtotal		30,000	3,000
Regional Total		84,890 (Current) 88,390 (Current and Planned)	~13,969
MWD Regional Storage (Partnered)			
Chino Basin	MWD Conjunctive Use Program (DYYP)	100,000 (shared with IEUA)[4]	Managed by MWD[3]

1. Based on 2024 Annual Watermaster Report (Six Basins Watermaster, 2025). Final 2025 stored balances are subject to ongoing Six Basins Watermaster reconciliation.
2. Balance estimated based on the PBWA Board of Commissioners' October 2024 authorization to purchase 3,000 AF of cyclic storage for the 2025-2029 water years (PBWA, 2024b).
3. The 100,000 AF maximum capacity represents a regional MWD account shared with the IEUA. Because the stored water is owned by MWD and called at MWD's discretion, the current stored balance is excluded from TVMWD's exclusive local storage totals to accurately reflect local asset control and avoid double-counting MWD supplies.

Groundwater banking programs are a formalized extension of the Region's conjunctive use strategy. While general groundwater storage involves recharging the aquifer to maintain basin health, "banking" involves formal, contractual agreements that allow an agency to deposit a quantified volume of water into a basin and retain the legal right to extract, transfer, or export that specific volume of water at a later date.

Because the Region overlies multiple adjudicated and managed basins, groundwater banking requires close coordination with basin Watermasters to ensure that deposits and withdrawals do not negatively impact basin safe yields or water quality.

3.7.2. Recharge Mechanisms and Operational Constraints

To physically place water into these groundwater storage accounts, TVMWD purchases untreated imported water from MWD and delivers it to various regional spreading grounds, such as the San Antonio Spreading Grounds (Six Basins) and the Santa Fe Spreading Grounds (Main San Gabriel Basin). Water is also banked "in-lieu" by providing treated surface water to retail agencies, allowing them to turn off their groundwater pumps and leave their groundwater rights in the aquifer.

While TVMWD possesses significant "paper" storage capacity, the physical availability of spreading facilities and conveyance pipelines can limit the ability to fully utilize these programs. During extreme wet years, spreading grounds must be shared with local flood control and stormwater capture operations, occasionally limiting the volume of imported water that can be recharged simultaneously.

Planned Groundwater Mitigation Projects

To overcome these operational constraints and maximize the Region's conjunctive use potential, TVMWD and its member agencies have identified a suite of regional mitigation projects focused on expanding treatment capacity, installing new extraction and injection wells, and building interties to move stored water across the Region more effectively. These projects are described in more detail in **Section 3.9**.

3.8. Desalination Opportunities

The CWC requires urban water suppliers to evaluate the opportunities for the development of desalinated water, including ocean water, brackish surface water, and brackish groundwater, as a long-term supply. Desalination involves treating water with high salinity levels – typically using advanced membrane processes such as reverse osmosis (RO) – to produce potable drinking water.

3.8.1. Opportunities for Brackish Water and/or Groundwater Desalination

Brackish groundwater refers to groundwater with elevated levels of TDS and salts, often resulting from historical agricultural practices or localized geological conditions.

Currently, the primary groundwater quality constraints within the Region are related to VOCs, nitrates, and CECs such as PFAS. Participating Agencies are actively investing in advanced water treatment infrastructure – including ion exchange and RO trains, such as the additions planned at the Cal Poly Pomona Water Treatment Plant – to address these specific contaminants.

While RO technology is capable of desalting brackish water, large-scale brackish groundwater desalination specifically for the purpose of salt removal is not currently a primary supply development strategy for the TVMWD service area. However, as regional salt and nutrient management plans continue to monitor TDS accumulation in shared basins like the Chino Basin, the deployment of desalter operations may become a more prominent opportunity in the future. At this time, the Region focuses its groundwater recovery investments on addressing industrial and chemical contaminants to restore stranded well assets rather than brackish desalting.

3.8.2. Opportunities for Seawater Desalination

Because the TVMWD service area is located in inland eastern Los Angeles County, it is geographically landlocked. Therefore, the direct development of seawater desalination facilities within the Region is physically and economically infeasible.

However, the Region recognizes and supports seawater desalination as a vital component of Southern California's overall water supply reliability. MWD actively supports the development of seawater desalination by its coastal member agencies through the Local Resources Program (LRP). When coastal agencies develop local desalinated supplies, it offsets their demand for imported water from the SWP and the Colorado River. This reduction in coastal demand directly benefits inland agencies like TVMWD by increasing the availability and reliability of imported water in MWD's regional storage network. Consequently, while TVMWD will not construct seawater desalination facilities, it indirectly relies on regional desalination advancements to bolster its imported water reliability.

3.9. Planned Water Supply Projects and Programs

As detailed throughout this chapter, the TVMWD service area relies on a complex, interconnected portfolio of imported and local water supplies. However, escalating climate change impacts – such as hydrologic volatility, prolonged droughts, and reduced imported water reliability – combined with increasingly stringent water quality regulations (e.g., new MCLs for PFAS), threaten the historical yield and flexibility of these resources.

To proactively mitigate these vulnerabilities and ensure long-term regional water security, TVMWD and its Participating Agencies have identified a suite of collaborative water supply projects and programs that focus on optimizing existing infrastructure, remediating stranded groundwater assets, expanding conjunctive use storage, and maximizing the physical capture and treatment of available local supplies. The key planned regional projects, which are at various stages of evaluation, design, and implementation, are detailed in TVMWD's 2025 WRMP (**Part 3, Appendix H**). These projects include:

Project 1: External Partnership with CVWC (formerly CIC) (Main Basin)

Through the Puente Basin Water Agency (described in **Section 3.2.1**), the Region is pursuing an external partnership with CVWC to access existing surplus water supplies. This project involves the construction of a new pipeline intertie that will allow the pumping of surplus CVWC well and surface water from the Main San Gabriel Basin directly into the Badillo-Grand pipeline. By physically importing this surplus local water eastward, the intertie is estimated to provide up to 2,000 AFY of supply, directly offsetting the participating agencies' reliance on TVMWD imported water deliveries.

Project 2: TVMWD Groundwater Reliability Improvement Program (GRIP)

This regional project would include a TVMWD partnership with the City of Glendora and the Puente Basin Water Agency to implement a regional distribution network and local supplies by utilizing 9,000 AF/year of stranded city assets. The regional distribution network would be augmented by the construction of new treatment facilities and conveyance pipelines. Three Valleys, as the lead agency, will

develop the project that includes new replacement wells with wellhead treatment for City of Glendora's Wells #3, 4, and 7, and the pipeline and pumpstations. This regional project could also be expanded to address water quality concerns for more member agencies. This project would increase regional water supply reliability, thereby improving operational flexibility by integrating additional water sources into the existing network. This regional project would provide an estimated 9 TAF toward Three Valleys' goal of increasing overall water supply by 15 TAF.

Project 3: TVMWD Storing Water in Main San Gabriel Basin (GRIP+)

This project represents a major regional partnership between TVMWD, the City of Glendora, and the City of Pomona to maximize the storage of surplus imported water during wet years at the Santa Fe Spreading Grounds. To ensure this stored water can be efficiently recovered and distributed during droughts, the project expands physical extraction and conveyance capacity. Infrastructure plans include the installation of five new extraction wells (two dedicated to Glendora and three to Pomona) equipped with necessary wellhead treatments. Additionally, the project will construct approximately five miles of potable water pipeline to connect these Main San Gabriel Basin supplies directly to Pomona's distribution system and the Pomona-Walnut-Rowland JWL. Once fully implemented, this project is anticipated to produce approximately 9,200 AFY of highly reliable local groundwater supply.

Project 4: TVMWD-Pomona Chino Basin Conjunctive Use Exchange

Building upon the Region's successful participation in the existing MWD Dry-Year Yield Program detailed in **Section 3.7.1**, TVMWD and the City of Pomona are actively evaluating a mutually beneficial "in-lieu" exchange program to leverage the Chino Basin. While the MWD DYYP provides a broad regional buffer for the State Water Project, this planned TVMWD partnership focuses on highly localized infrastructure optimizations. Under this arrangement, TVMWD would provide funding to construct or upgrade Pomona's extraction and treatment infrastructure in the Chino Basin. In exchange, Pomona would pump and deliver an equivalent amount of its local water for use by other TVMWD member agencies. This exchanged water would be conveyed westward via the JWL and the Badillo/Grand Transmission Main. This creates a highly reliable local groundwater source for agencies that currently possess high dependencies on imported water (such as the City of La Verne, Golden State Water Company, and the Puente Basin Water Agency).

Other planned regional efforts and projects include:

Spadra Basin Optimization & Cal Poly Pomona Injection

This initiative combines multiple concepts to revitalize the non-adjudicated Spadra Basin using advanced treated recycled water. Spearheaded collaboratively by Walnut Valley Water District, the City of Pomona, and California State Polytechnic University, Pomona (Cal Poly), the optimization project proposes the construction of an underground recharge gallery, seven injection wells, five production wells, and the expansion of the Cal Poly Reverse Osmosis (RO) plant. A key component involves utilizing TVMWD's Corporate Center Drive properties (adjacent to the I-57 and I-71 freeways) for new injection and extraction wells. By partnering with the Los Angeles County Sanitation Districts to secure advanced treated recycled water for injection, this project aims to create a drought-proof local storage asset with a capacity of up to 3,500 AF.

Stormwater Capture Enhancements

To address the climate-driven shift toward shorter, higher-intensity winter storm events, the Region is upgrading its local spreading grounds to prevent volatile flash-flood flows from bypassing capture facilities. At the San Antonio Spreading Grounds, plans include excavating and developing new, deeper recharge basins (up to 200 feet in depth) to drastically increase instantaneous stormwater capture and storage volume. Concurrently, at the Thompson Creek Spreading Grounds, the Region is working in cooperation with the Los Angeles County Department of Public Works (LACDPW) to upgrade aging conveyance ditches and diversion structures to maximize the flow rate of water safely directed into the spreading basins.

4. Regional Water Use

Accurately projecting regional water use is a critical component of water supply planning. Within the TVMWD service area, historical water demands have been heavily influenced by population growth, climate variability, and diverse land uses ranging from dense urban centers to large institutional campuses. However, as the Region looks toward 2050, water use trends are undergoing a significant transformation. Despite anticipated modest population and economic growth, overall regional water demands are projected to decline. This downward shift is driven by a strong local commitment to water use efficiency and the implementation of stringent new state conservation mandates.

This chapter provides a comprehensive overview of water demands across the Region. It details the aggregated historical and projected water use for the Participating Agencies and the Other Member Agencies. Furthermore, this chapter outlines the Region's successful compliance with past SB X7-7 targets and describes the transition to the new "Making Conservation a California Way of Life" (CWOL) regulatory framework, including the development of specific Urban Water Use Objectives (UWUOs). Finally, it highlights the robust portfolio of regional and local Demand Management Measures (DMMs) and public outreach programs that the agencies are actively deploying to achieve these long-term efficiency goals.

4.1. Total Water Demands by Agency

As shown in **Table 4-1**, despite some continued growth due to infill and redevelopment, the total projected demand in the Region is expected to decline over time through 2050. This is due to implementation of the State's new "Making Conservation a California Way of Life Regulation" (CWOL Regulation), which is discussed further in **Section 4.2.2**. To comply with the CWOL Regulation, it is anticipated that all the Participating Agencies will need to reduce their water demands relative to 2017 to 2021 demands. The reductions vary by agency and range from 9% (City of Pomona and GSWC – Claremont) to 37% (City of Glendora). This estimated reduction is based on the actual customer base in 2017-2021 so it does not account for demand increases from future growth. It is generally assumed that new growth will comply with water use efficiency standards due to current building codes.

Table 4-1. Projected Total Annual Retail Water Demand (RUWMP Participating Agencies) (Acre-Feet)

Agency	2030	2035	2040	2045	2050
City of Glendora	10,004	9,878	9,696	9,517	9,342
City of La Verne	6,352	6,340	6,301	6,263	6,228
City of Pomona	20,147	20,116	19,917	19,719	19,521
GSWC – Claremont	9,873	9,603	9,262	8,941	8,644
GSWC – San Dimas	9,713	10,000	9,970	9,937	9,903
Rowland Water District	10,267	10,004	9,777	9,584	9,421
Walnut Valley Water District	16,369	15,246	14,559	14,580	14,589
Projected Total Demand	**82,725**	**81,187**	**79,482**	**78,541**	**77,648**

4.2. Water Use Efficiency

The Region has invested in expanding and optimizing local water resources to reduce reliance on imported supplies and maintain cost stability for its customers. At the same time, the Region continues to advance water use efficiency and conservation programs that have meaningfully reduced per capita demand and strengthened long-term supply reliability. These conservation efforts are a core component of the Region's resource management strategy and help maximize the value of available supplies.

4.2.1. SB X7-7 Compliance

Senate Bill 7 of Special Extended Session 7 (SBX7-7) was incorporated into the UWMP Act in 2009 and requires that all water suppliers increase water use efficiency with the overall goal to decrease per capita water consumption within the state by 20 percent by the year 2020. SBX7-7 required DWR to develop certain criteria, methods, and standard reporting forms through a public process that water suppliers could use to establish their baseline water use and determine their water conservation targets. SBX7-7 and DWR's Methodologies for Calculating Baseline and Compliance Urban Per Capita Water Use (DWR, 2016) specify methodologies for determining the baseline water demand, 2015 interim urban water use target, and the 2020 urban water use target for Western, as described in detail in the Participating Agencies' 2020 UWMPs. All of the Participating Agencies met their targets to reduce per capita water consumption by 20 percent by 2020. For final verification in the 2025 UWMP, **Section 3** of each retail agency chapter in **Part 2** also demonstrates that the suppliers met its 2020 target.

4.2.2. New Water Conservation Legislation

Going forward, Participating Agencies that are retail suppliers are continuing to align with new water use efficiency standards from the CWOL Regulation, which supersede SBX7-7 standards. In 2018, two policy bills were enacted by the California Legislature, Assembly Bill 1668 (AB1668, Friedman) and Senate Bill 606 (SB606, Hertzberg), collectively referred to as the "2018 Water Conservation Legislation." Based on the 2018 Water Conservation Legislation, related legislation, and subsequent adoption of the CWOL Regulation (SWRCB, 2024), each urban retail water supplier must calculate and comply with its specific Urban Water Use Objective (UWUO), with efficiency standards becoming increasingly stringent through 2040. DWR and the SWRCB have developed a reporting framework for calculating the UWUO and compliance annually. The UWUO is composed of several standards to create one comprehensive objective, as shown in **Figure 4-1**.

Figure 4-1. Urban Water Use Objectives Regulation Overview



Indoor Residential

The indoor residential water use standard was set as part of Senate Bill (SB) 1157, which adopts recommendations made by DWR and the State Water Board to reduce indoor water use targets from 55 gallons per capita per day (gpcd) to 47 gpcd by 2025 and 42 gpcd by 2030.

Outdoor Residential

Outdoor residential use is expected to be based on the amount of irrigable area and an increasingly stringent landscape efficiency factor with compliance progress measured annually through 2035, when the efficiency factor is proposed to remain constant. The SWRCB assists agencies in calculating outdoor residential use budgets by providing aerial imagery that delineates irrigable irrigated, irrigable but not irrigated, and non-irrigable areas. This data has been provided to suppliers and is expected to be updated in five-year cycles.

Commercial, Industrial, and Institutional Landscape

Commercial, industrial, and institutional (CII) standards will be based on total gallons used and will require implementation of dedicated irrigation meters or in-lieu technologies, and other performance measures for conservation. Additionally, CII customer accounts will need to be classified into specific and general categories for reporting and compliance over the course of several years yet to be determined by the State.

Water Loss

The water loss component of the UWUO is a standalone component that must be met on its own beginning in 2028. **Section 2.1.3** of each retail agency chapter in **Part 2** describes the water loss standard and the agency's progress toward meeting it.

Additionally, each urban retail water supplier must submit an Annual Water Use Report (AWUR) starting January 1, 2024 to document progress toward complying with the UWUO regulations.

As discussed in **Section 2.2** of each retail agency chapter in **Part 2**, some Participating Agencies in this RUWMP elected to incorporate the conservation that would be required to meet the UWUO into the future demand projections directly and some elected to assume less conservation than would be required to meet the UWUO for the purpose of more conservative supply planning. The required calculations and reporting associated with the CWOL Regulations are complex and extensive and are therefore not required to be included in the UWMP.

4.2.3. Regional Demand Management Programs

TVMWD retail agencies have adopted water waste prevention ordinances, universal metering, tiered conservation pricing, and robust public education and outreach programs, as described in Section 8 of each retail agency chapter in **Part 2**. Common measures include active leak detection, annual water loss audits, and dedicated conservation staffing to support program implementation. All seven retail agencies participate in one or more components of MWD's regional rebate program: SoCal Water$mart.

This program includes rebates for high efficiency indoor fixtures, irrigation devices, and turf removal. Other programs offered by retailers, or through participation with MWD, include water use efficiency surveys and leak repair programs.

Retail agencies have also launched unique and innovative efforts. La Verne provides video-based water-wise landscaping training classes that teaches how to use rainwater as a resource and manage irrigation in backyards. Walnut Valley installed Hydrant Guard check valves, which aim to reduce catastrophic water loss associated with broken fire hydrants. Rowland Heights offers multi-tiered school and youth education programs. Rowland Heights and Glendora have each deployed advanced metering systems with customer leak alerts and usage analytics. Pomona participates in, or hosts, more than a dozen events throughout the year including the “Water is Life” art poster and essay contest. Pomona also has a Water Watcher reporting line (online and via phone) for reporting visible leaks or excess runoff.

These regional and local programs work together to support the Region’s strategy to reduce demand, improve efficiency, reduce water loss, and reinforce conservation as California way of life.

5. Comparison of Regional Supplies and Demands

The continuous and reliable provision of potable water is the foundational mandate of urban water suppliers. In accordance with California Water Code § 10635(a), every urban water supplier must assess the reliability of its water service by comparing total projected water use with the projected water supply over a planning horizon of at least 20 years.

This chapter provides that core statutory assessment for the TVMWD service area as a whole, extending the planning horizon out to 2050 to ensure robust long-term resiliency. The analysis rigorously stress-tests the Region's water portfolio under varying hydrological conditions, specifically encompassing a Normal Water Year, a Single Dry Year, a drought scenario lasting Five Consecutive Water Years, and a highly conservative Twenty-Year Drought scenario.

To navigate the complexities of shared imported water aqueducts and interconnected groundwater aquifers, this chapter synthesizes supply and demand data gathered from across the entire 133-square-mile TVMWD service area. As established in **Section 1**, the aggregated "Regional Context" analysis meticulously integrates projections for both the seven Participating Agencies and the Other Member Agencies. By systematically incorporating all entities that draw upon the Region's shared infrastructure, the ensuing analysis provides a highly accurate, bottom-up aggregation of the regional water balance. The water service reliability assessment for each of the Participating agencies individually is presented in **Chapter 5** of the respective chapters in **Part 2**.

5.1. Supply and Demand Projections Methodology

Evaluating water supply reliability through the year 2050 requires sophisticated forecasting methodologies that account for complex demographic shifts, the escalating impacts of climate change, evolving regulatory constraints, and behavioral modifications in urban water consumption. The analytical framework developed for this 2025 RUWMP utilizes ground-truthed projections and operationally conservative supply capability assessments to rigorously test the Region's overall water portfolio.

5.1.1. Demand Projections

The demand projections utilized in this comparison (detailed in **Chapter 4**) were generated using a multi-scenario analytical approach. Recognizing that a single, flat population growth multiplier is insufficient for modern water planning, distinct demand projection methodologies were developed for each agency. These dynamic scenarios ranged from baseline trend continuations to aggressive conservation scenarios modeled to ensure statutory compliance with the new CWOL Regulation.

Through collaborative working sessions, each participating agency selected the specific methodology most representative of its local service area dynamics, accounting for factors such as high-density infill development, the prevalence of Accessory Dwelling Units (ADUs), and historical per capita usage trends. Crucially, the finalized demand projections incorporate both "Passive Conservation" (savings achieved

organically through the natural replacement of older plumbing fixtures per California building codes) and "Active Conservation" (savings derived from agency-sponsored rebate initiatives and turf-removal programs). Detailed explanations of the demand projection methodology used for each of the Participating Agencies are included in **Section 2.2** of each agency chapter in **Part 2**.

5.1.2. Supply Projections

Water supply reliability planning frequently grapples with the discrepancy between contractual water rights (theoretical capacity) and actual, physical water availability (operational reality). To systematically address potential differences, the analytical framework for the 2025 RUWMP evaluated two distinct methodologies for projecting future local water supply: the "Paper Water" approach and the "Real Water" approach.

- **Option 1:** The "Real Water" Approach (Utilization-Based): This approach is grounded strictly in empirical operational data. Under this framework, the baseline local agency supplies are tied directly to the actual historical averages extracted and utilized between the years 2021 and 2025. This period provides a good representation of hydrologic variations because it includes the severe, critically dry conditions of 2021–2022, the exceptionally wet hydrology of 2023, and the transitional conditions of 2024-2025. This period also reflects the most recent operational constraints that impact supply availability. By capturing recent shifts in groundwater availability – specifically, extraction wells taken offline or restricted due to newly implemented PFAS and CEC water quality regulations – this baseline ensures the supply projections reflect current physical reality rather than outdated infrastructure capacities.
- **Option 2:** The "Paper Water" Approach (Capacity-Based): This approach projects future supply based on the maximum legal rights or absolute physical extraction capacity an agency holds within a basin. While useful for demonstrating legal entitlements and maximum potential supply, this approach can inadvertently mask critical infrastructure bottlenecks or localized water quality constraints (such as expanding contaminant plumes) that prevent an agency from accessing its full theoretical allocation.

To ensure the most conservative, defensible, and operationally realistic stress-test possible, the Participating Agencies unanimously selected the "Real Water" approach for their primary supply projections in this 2025 RUWMP. Once this empirical 2021–2025 baseline was established, specific climate change factors – derived from TVMWD's 2024 Climate Assessment (TVMWD, 2024a; provided in **Part 3, Appendix I**) and updated through 2025 for these analyses – were applied to project the degradation, volatility, or shift in local supply availability through 2050. Any projected unmet demand remaining after these adjusted local supplies are exhausted is assumed to be met by imported water supply deliveries from TVMWD and MWD.

Detailed explanations of the supply projection methodology used for each of the Participating Agencies are included in **Section 4** of each agency chapter in **Part 2**.

5.2. Summary of Regional Supplies and Demands

The core statutory requirement of the UWMP is the direct comparison of total water supply sources available to the water supplier with the long-term total projected water use over the next 20 years, in five-year increments. This assessment determines if the Region possesses the physical, contractual, and infrastructural capacity to support its population through 2050 under varying climatic stressors.

Because the Participating Agencies selected the "Real Water" (Utilization-Based) methodology for this analysis, projected supplies are managed conjunctively to meet projected demands. Any localized deficits in groundwater or surface water are met by imported water deliveries from TVMWD and MWD.

To understand the supply and demand comparisons in the following sections, it is critical to understand how the Region's water portfolio changes under hydrological stress.

A key trend in Southern California urban water management is that during dry years, water demand typically increases. Hotter baseline temperatures and a lack of natural precipitation drive residents and institutional campuses to increase outdoor irrigation to maintain landscaping. To meet this increased demand, the retail agencies adapt their operations. Some agencies ramp up extraction from local groundwater wells (drawing upon cyclical storage accounts), and agencies heavily reliant on imported water lean more on TVMWD to supply imported water from MWD.

As discussed in **Section 3.2.1**, Metropolitan's 2025 UWMP projects 100 percent imported water supply reliability under normal year, single dry year and 5 consecutive dry year scenarios and that conclusion is incorporated into this analysis (MWD, 2026b).

5.2.1. Normal Year

A "Normal Year" assessment evaluates the system under average climate conditions and standard baseline water yields. For this 2025 RUWMP, the Normal Year is defined by the average historical hydrology and usage patterns observed over the 2021–2025 baseline period. It is important to note that this specific five-year baseline applies exclusively to the Region's local supplies and retail demands; projected imported water availability relies on MWD's independent 2025 UWMP reliability modeling, which utilizes its own distinct, long-term historical baselines.

To accurately forecast reliability through 2050, the long-term climate change factors derived from the Region's 2024 Climate Assessment (described in **Section 2.5.2**) were applied to these baseline local supplies (described in **Section 3**) to account for projected warming, increased evapotranspiration, and shifting precipitation patterns. Additionally, the aggregated Normal Year demand projections incorporate anticipated demographic growth (described in **Section 2.3**) and the strict, mandatory active and passive conservation targets required by the new CWOL Regulations (described in **Section 4**).

Based on this thorough analysis, the TVMWD RUWMP Participating Agencies and entire service area exhibit total supply reliability through the year 2050. **Table 5-1** and **Table 5-2** detail the Normal Year

Supply and Demand comparison in five-year increments through 2050 for the specific Participating Agencies and the entire TVMWD service area, respectively.

Table 5-1. Normal Year Supply and Demand (RUWMP Participating Agencies) (Acre-Feet)

Category	2030	2035	2040	2045	2050
Local Groundwater	**31,495**	**32,173**	**31,697**	**31,046**	**30,225**
City of Glendora	9,090	9,018	8,864	8,642	8,357
City of La Verne	1,849	1,834	1,803	1,758	1,700
City of Pomona	13,266	13,160	12,936	12,612	12,196
GSWC - Claremont	4,593	4,534	4,493	4,456	4,420
GSWC - San Dimas	1,996	1,970	1,952	1,937	1,921
Rowland Water District	700	1,657	1,649	1,641	1,633
Recycled Water[1]	**5,058**	**5,132**	**5,191**	**5,234**	**5,263**
City of Pomona	1,874	1,874	1,874	1,874	1,874
Rowland Water District	1,033	1,127	1,219	1,309	1,396
Walnut Valley Water District	2,152	2,131	2,098	2,051	1,993
Surface Water	**1,691**	**1,674**	**1,649**	**1,616**	**1,576**
City of Pomona	1,691	1,674	1,649	1,616	1,576
Imported Water (TVMWD/MWD)	**41,991**	**37,199**	**35,956**	**35,684**	**35,658**
City of Glendora	906	853	825	867	977
City of La Verne	4,503	4,506	4,498	4,505	4,528
City of Pomona	3,315	3,408	3,458	3,617	3,876
GSWC - Claremont	5,280	5,069	4,769	4,485	4,224
GSWC - San Dimas	7,036	7,321	7,310	7,294	7,278
Rowland Water District	7,433	6,128	5,836	5,588	5,380
Walnut Valley Water District	13,518	9,915	9,261	9,329	9,396
Imported Water (Other)[2]	**2,491**	**5,009**	**4,988**	**4,960**	**4,926**
City of Glendora	8	8	7	8	9
GSWC - San Dimas	682	709	707	706	705
Rowland Water District	1,101	1,092	1,073	1,047	1,012
Walnut Valley Water District	700	3,200	3,200	3,200	3,200
Projected Total Supply	**82,726**	**81,187**	**79,481**	**78,541**	**77,648**
City of Glendora	10,004	9,878	9,696	9,517	9,342
City of La Verne	6,352	6,340	6,301	6,263	6,228
City of Pomona	20,147	20,116	19,917	19,719	19,521
GSWC - Claremont	9,873	9,603	9,262	8,941	8,644
GSWC - San Dimas	9,714	10,000	9,969	9,937	9,904
Rowland Water District	10,267	10,004	9,777	9,584	9,421
Walnut Valley Water District	16,369	15,246	14,559	14,580	14,589
Projected Total Demand	**82,726**	**81,187**	**79,481**	**78,541**	**77,648**

1. To accurately reflect the separation of the Region's potable and non-potable distribution systems, it is assumed that projected Recycled Water supply strictly equals Recycled Water demand for non-potable uses. All other water supplies listed in this table are utilized exclusively to meet potable demands. There is no crossover of non-potable supplies to meet potable demands.

2. This category represents water supplies purchased, transferred, or imported from entities other than TVMWD/MWD (described in **Section 3.1.4**).

Table 5-2. Normal Year Supply and Demand (Regional Total – All Agencies) (Acre-Feet)

Category	2030	2035	2040	2045	2050
Local Groundwater	65,872	66,550	66,074	65,448	64,627
Recycled Water[1]	7,688	7,762	7,821	7,864	7,893
Surface Water	2,541	2,524	2,499	2,466	2,426
Imported Water (TVMWD/MWD)	60,832	56,210	54,998	54,755	54,729
Imported Water (Other)[2]	16,239	18,756	18,735	18,708	18,673
Projected Total Supply	**153,172**	**151,803**	**150,127**	**149,241**	**148,348**
Projected Total Demand	**153,172**	**151,803**	**150,127**	**149,241**	**148,348**

1. To accurately reflect the separation of the Region's potable and non-potable distribution systems, it is assumed that projected Recycled Water supply strictly equals Recycled Water demand for non-potable uses. All other water supplies listed in this table are utilized exclusively to meet potable demands. There is no crossover of non-potable supplies to meet potable demands.
2. This category represents water supplies purchased, transferred, or imported from entities other than TVMWD/MWD (described in **Section 3.1.4**).

5.2.2. Single Dry Year

A "Single Dry Year" assessment models the reliability of the system under acute, short-term hydrological stress. To accurately model this scenario and predict future behavior, the analysis utilizes empirical data from the 2021 fiscal year, which represents a severe, comprehensively documented dry-year condition within the Region.

Based on TVMWD's operational data, the historical average year baseline was established using the five-year period of 2021–2025. During dry years, hotter temperatures and a lack of rainfall typically drive increased outdoor irrigation, resulting in higher overall water demand. To project future drought demands, historical peaking factors were calculated and applied to the projected normal year demands:

- RUWMP Participating Agencies: The ratio of water utilized by the seven Participating Agencies during 2021 (94,504 AF) to their historical average (83,031 AF) yielded a higher scaling factor of 114 percent.
- Regional Total (All Agencies): The ratio of water utilized by all 13 agencies during the historical single dry year of 2021 (156,297 AF) to the historical average (144,907 AF) yielded a scaling factor of 108 percent.

These respective scaling factors (114% and 108%) were applied to the projected normal year demands to forecast the elevated water demands during future single dry years. As shown in **Table 5-3** and **Table 5-4**, the Region possesses the physical and contractual capacity to completely fulfill these elevated demands, indicating total reliability during all future Single Dry Year events modeled through 2050.

Table 5-3. Single Dry Year Supply and Demand (RUWMP Participating Agencies) (Acre-Feet)

Category	2030	2035	2040	2045	2050
Local Groundwater	35,847	36,619	36,077	35,336	34,402
Recycled Water[1]	5,757	5,841	5,908	5,957	5,990
Surface Water	1,925	1,906	1,877	1,839	1,793
Imported Water (TVMWD/MWD)	47,793	42,339	40,925	40,615	40,586
Imported Water (Other)[2]	2,835	5,701	5,677	5,646	5,606
Projected Total Supply	**94,157**	**92,406**	**90,464**	**89,393**	**88,377**
Projected Total Demand	**94,157**	**92,406**	**90,464**	**89,393**	**88,377**

1. To accurately reflect the separation of the Region's potable and non-potable distribution systems, it is assumed that projected Recycled Water supply strictly equals Recycled Water demand for non-potable uses. All other water supplies listed in this table are utilized exclusively to meet potable demands. There is no crossover of non-potable supplies to meet potable demands.
2. This category represents water supplies purchased, transferred, or imported from entities other than TVMWD/MWD (described in **Section 3.1.4**).

Table 5-4. Single Dry Year Supply and Demand (Regional Total – All Agencies) (Acre-Feet)

Category	2030	2035	2040	2045	2050
Local Groundwater	71,050	71,781	71,267	70,592	69,707
Recycled Water[1]	8,292	8,372	8,436	8,482	8,513
Surface Water	2,741	2,723	2,696	2,660	2,616
Imported Water (TVMWD/MWD)	65,614	60,629	59,321	59,059	59,031
Imported Water (Other)[2]	17,515	20,231	20,208	20,178	20,141
Projected Total Supply	**165,212**	**163,736**	**161,928**	**160,972**	**160,009**
Projected Total Demand	**165,212**	**163,736**	**161,928**	**160,972**	**160,009**

3. To accurately reflect the separation of the Region's potable and non-potable distribution systems, it is assumed that projected Recycled Water supply strictly equals Recycled Water demand for non-potable uses. All other water supplies listed in this table are utilized exclusively to meet potable demands. There is no crossover of non-potable supplies to meet potable demands.
4. This category represents water supplies purchased, transferred, or imported from entities other than TVMWD/MWD (described in **Section 3.1.4**).

5.2.3. Five-Consecutive Dry Year and Drought Risk (2026-2030) Assessments

In accordance with California Water Code Section 10635(b), the evaluation of a drought lasting five consecutive water years serves as the Region's statutory Drought Risk Assessment (DRA). This assessment verifies the near-term resiliency of the Region's cyclic storage mechanisms and wholesale contracts by stress-testing the limits of aquifer drawdown and reservoir depletion over the immediate five-year planning horizon (2026 through 2030).

To estimate demands during a five-consecutive-year drought, the Region utilized the historical drought sequence from 2018 through 2022. The ratio of water utilized in each of these years was compared to the 2021-2025 historical average to yield specific annual scaling factors.

- RUWMP Participating Agencies: The historical water demand sequence yielded scaling factors of 112 percent, 102 percent, 107 percent, 114 percent, and 107 percent for years one through five.
- Regional Total (All Agencies): The historical water demand sequence yielded scaling factors of 112 percent, 102 percent, 107 percent, 108 percent, and 104 percent for years one through five of the drought, respectively.

These sequences of scaling factors were applied to the projected normal year demands to forecast the fluctuating, but consistently elevated, demands of a multi-year drought.

As shown in **Table 5-5** and **Table 5-6**, because the Region's groundwater basins are managed holistically using OSY, agencies are legally and physically permitted to intentionally draw down aquifer levels during a prolonged five-year drought starting in 2026, balancing the overdraft with replenishment during subsequent wet years. Consequently, backed by MWD's surface reservoirs and local groundwater banks, the Region projects sufficient supply capacity to meet these scaled demands across a five-year drought horizon through 2030.

Table 5-5. Regional Drought Risk Assessment (2026-2030) Supply and Demand by Source (RUWMP Participating Agencies) (Acre-Feet)

Category	2026	2027	2028	2029	2030
Local Groundwater	35,241	32,127	33,642	35,847	33,634
Recycled Water[1]	5,660	5,160	5,403	5,757	5,402
Surface Water	1,893	1,725	1,807	1,925	1,806
Imported Water (TVMWD/MWD)	46,986	42,834	44,853	47,793	44,843
Imported Water (Other)[2]	2,787	2,541	2,661	2,835	2,660
Projected Total Supply	**92,567**	**84,387**	**88,365**	**94,157**	**88,346**
Projected Total Demand	**92,567**	**84,387**	**88,365**	**94,157**	**88,346**

1. To accurately reflect the separation of the Region's potable and non-potable distribution systems, it is assumed that projected Recycled Water supply strictly equals Recycled Water demand for non-potable uses. All other water supplies listed in this table are utilized exclusively to meet potable demands. There is no crossover of non-potable supplies to meet potable demands.
2. This category represents water supplies purchased, transferred, or imported from entities other than TVMWD/MWD (described in **Section 3.1.4**).

Table 5-6. Regional Drought Risk Assessment (2026-2030) Supply and Demand by Source (Regional Total – All Agencies) (Acre-Feet)

Category	2026	2027	2028	2029	2030
Local Groundwater	73,708	67,194	70,361	71,050	68,201
Recycled Water[1]	8,602	7,842	8,212	8,292	7,960
Surface Water	2,844	2,592	2,715	2,741	2,631
Imported Water (TVMWD/MWD)	68,069	62,054	64,978	65,614	62,983
Imported Water (Other)[2]	18,170	16,565	17,345	17,515	16,813
Projected Total Supply	**171,393**	**156,247**	**163,612**	**165,212**	**158,588**
Projected Total Demand	**171,393**	**156,247**	**163,612**	**165,212**	**158,588**

1. To accurately reflect the separation of the Region's potable and non-potable distribution systems, it is assumed that projected Recycled Water supply strictly equals Recycled Water demand for non-potable uses. All other water supplies listed in this table are utilized exclusively to meet potable demands. There is no crossover of non-potable supplies to meet potable demands.
2. This category represents water supplies purchased, transferred, or imported from entities other than TVMWD/MWD (described in **Section 3.1.4**).

While **Table 5-5** and **Table 5-6** illustrate the detailed shift in supply sources for the 2030 horizon, **Table 5-7** and

Table 5-8 demonstrate the Region's total supply reliability across all five-year drought horizons through 2050.

Table 5-7. Multiple Dry Years Supply and Demand (RUWMP Participating Agencies) (Acre-Feet)

Sequence Year	Category	2030	2035	2040	2045	2050
First Year	Projected Supply	92,567	90,845	88,936	87,884	86,885
	Projected Demand	92,567	90,845	88,936	87,884	86,885
	Surplus / Deficit	**0**	**0**	**0**	**0**	**0**
Second Year	Projected Supply	84,387	82,817	81,077	80,118	79,207
	Projected Demand	84,387	82,817	81,077	80,118	79,207
	Surplus / Deficit	**0**	**0**	**0**	**0**	**0**
Third Year	Projected Supply	88,365	86,721	84,898	83,894	82,940
	Projected Demand	88,365	86,721	84,898	83,894	82,940
	Surplus / Deficit	**0**	**0**	**0**	**0**	**0**
Fourth Year	Projected Supply	94,157	92,406	90,464	89,393	88,377
	Projected Demand	94,157	92,406	90,464	89,393	88,377
	Surplus / Deficit	**0**	**0**	**0**	**0**	**0**
Fifth Year	Projected Supply	88,346	86,702	84,880	83,876	82,922
	Projected Demand	88,346	86,702	84,880	83,876	82,922
	Surplus / Deficit	**0**	**0**	**0**	**0**	**0**

Table 5-8. Multiple Dry Years Supply and Demand (Regional Total - All Agencies) (Acre-Feet)

Sequence Year	Category	2030	2035	2040	2045	2050
First Year	Projected Supply	171,393	169,861	167,985	166,994	165,995
	Projected Demand	171,393	169,861	167,985	166,994	165,995
	Surplus / Deficit	**0**	**0**	**0**	**0**	**0**
Second Year	Projected Supply	156,247	154,851	153,141	152,237	151,326
	Projected Demand	156,247	154,851	153,141	152,237	151,326
	Surplus / Deficit	**0**	**0**	**0**	**0**	**0**
Third Year	Projected Supply	163,612	162,149	160,359	159,412	158,458
	Projected Demand	163,612	162,149	160,359	159,412	158,458
	Surplus / Deficit	**0**	**0**	**0**	**0**	**0**
Fourth Year	Projected Supply	165,212	163,736	161,928	160,972	160,009
	Projected Demand	165,212	163,736	161,928	160,972	160,009
	Surplus / Deficit	0	0	0	0	0
Fifth Year	Projected Supply	158,588	157,171	155,435	154,518	153,593
	Projected Demand	158,588	157,171	155,435	154,518	153,593
	Surplus / Deficit	0	0	0	0	0

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THREE VALLEYS REGIONAL URBAN WATER MANAGEMENT PLAN

APRIL 2026

2025 Part 2: Local Agency Urban Water Management Plans

PUBLIC REVIEW DRAFT

2025 RUWMP

APRIL 2026

Part 2 Chapter 5: GSWC - Claremont 2025 Urban Water Management Plan

Golden State Water Company
A Subsidiary of American States Water Company

GEI Consultants

WSC

Prepared by GEI Consultants, Inc. and Water Systems Consulting, Inc.

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Appendices

Part 4 of the 2025 RUMWP **Appendix E** contains Agency Supporting Information.

Acronyms and Abbreviations

Acronym	Description
AB1668	Assembly Bill 1668
AF	Acre-feet
AFY	acre-feet per year
AWWA	American Water Works Association
CII	commercial, industrial, and institutional
CPUC	California Public Utilities Commission
CRA	Colorado River Aqueduct
CWC	California Water Code
CWOL	Making Conservation a California Way of Life Regulation
DCP	Drought Contingency Plan
DMMs	demand management measures
DRA	Drought Risk Assessment
DWR	Department of Water Resources
DYYP	Dry-Year Yield Program
FY	Fiscal Year
GHGs	greenhouse gas
GIS	geographic information systems
GPCD	gallons per capita per day
GPM	Gallons Per Minute
gpmd	gallons per mile of pipe per day
gpscd	gallons per service connection per day
GRIP	Groundwater Reliability Improvement Program
GSWC	Golden State Water Company Claremont System
HECW	high-efficiency clothes washing
HVAC	Heating, Ventilation, and Air Conditioning
IEUA	Inland Empire Utilities Agency
kWh	kilowatt-hours
LACSD	Los Angeles County Sanitation District
MAF	million acre-feet
MWD	Metropolitan Water District of Southern California
OSY	Operating Safe Yield
PFAS	Per- and polyfluoroalkyl substances
PHET	premium high-efficiency toilets
PWRP	Pomona Water Reclamation Plant
RHNA	Regional Housing Needs Assessment
RUWMP	Regional Urban Water Management Plan
SB X7-7	Senate Bill 7 of Special Extended Session 7
SB606	Senate Bill 606
SBX7-7	Senate Bill 7 of Special Extended Session 7

SCAG	Southern California Association of Governments
SWP	State Water Project
TVMWD	Three Valleys Municipal Water District
U.S.	U.S. Census Bureau
USEPA	United States Environmental Protection Agency
UWMP	Urban Water Management Plan
UWUO	urban water use objective
VOCs	volatile organic compounds
WECWC	West End Consolidated Water Company
WRMP	Water Resources Master Plan
WSCP	Water Shortage Contingency Plan
WSIP	Water Savings Incentive Program
WUE	Water Use Efficiency
WWTP	Wastewater Treatment Plant

Individual UWMP

This chapter describes information specific to the Golden State Water Company (GSWC) Claremont System, including its supplies, demands, and water use efficiency programs. The information and analysis provided in this chapter supplements the regional information presented in **Part 1 of the 2025 Regional Urban Water Management Plan (RUWMP)** and is provided to fulfill the GSWC Claremont's reporting requirements for 2025 under the UWMP Act.

The regional analyses described in Part 1 (Regional Context) of the 2025 RUWMP were conducted using a consistent analytical framework, assumptions, and methodologies that are directly applicable to GSWC Claremont. GSWC Claremont relies on Part 1 of the RUWMP for the lay description, regional water supply availability, and the underlying technical methodology used to evaluate water supply reliability under normal, single dry-year, multiple dry-year, and five-year drought stress-test conditions.

The water supply reliability assessment and Drought Risk Assessment (DRA) applicable to GSWC Claremont's Urban Water Management Plan (UWMP) are presented in plain language in Part 1 of the 2025 RUWMP, specifically within Chapter 5.

Building upon that regional foundation, the supply and demand comparisons specific to GSWC Claremont are presented in the tables within this UWMP. Unless otherwise noted, the conclusions of the regional water supply reliability assessment and DRA are directly applicable to GSWC Claremont and satisfy the requirements of the Urban Water Management Planning Act and the 2025 UWMP Guidebook. A completed DWR UWMP Compliance Checklist for GSWC is provided in **Part 4, Appendix E-1**.

1. System Description

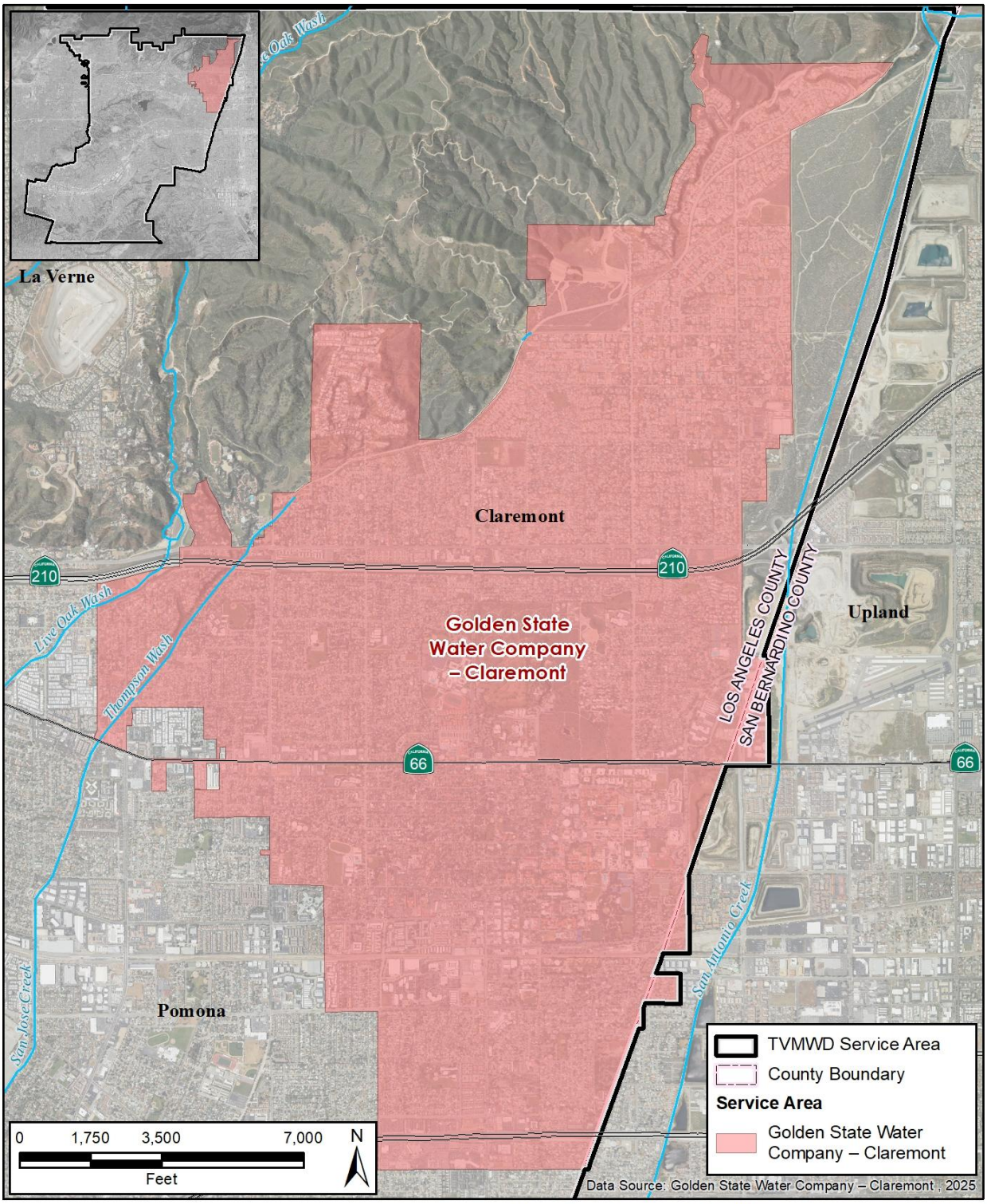
This section describes the GSWC Claremont System's water system, service area, population demographics, local climate, and land uses.

GSWC is a regulated public water utility that provides potable water service to customers in the City of Claremont, portions of the Cities of Montclair, Pomona, and Upland, and adjacent unincorporated areas of Los Angeles County. GSWC's service area encompasses an area of approximately 9.2 square miles and is located in the easterly portion of Los Angeles County and southerly of the San Gabriel Mountains. GSWC's service area is generally bordered by the Los Angeles County line to the east, the City of La Verne to the west, and the City of Pomona to the south. The GSWC Claremont System's service area is shown in **Figure 1-1**.

As a regulated utility, GSWC's water rates, service obligations, and capital improvement investments are overseen and approved by the California Public Utilities Commission through a formal process. This regulatory framework ensures that customers receive reliable, safe drinking water at reasonable rates while allowing the utility to recover costs associated with operating, maintaining, and upgrading water supply and distribution infrastructure.

GSWC obtains its water supply from local groundwater (from Six Basins and Chino Basin) and treated imported water from the Metropolitan Water District of Southern California (MWD) through Three Valleys Municipal Water District (TVMWD), as well as treated water from City of Upland.

Figure 1-1. Service Area



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19Apr2026 RS

1.1. Service Area

GSWC is a retail public water supplier that meets the definition of an urban water supplier with 11,491 municipal water service connections in 2024. The regional climate, which includes the GSWC Claremont System's service area, is described in **Part 1 Chapter 2** of the 2025 RUWMP.

1.1.1. Population, Demographics, and Socioeconomics

Estimates of population served by the GSWC are based on the 2020 U.S. Census Bureau and the Southern California Association of Governments (SCAG) (Southern California Association of Governments, 2024). A geographic information systems (GIS) analysis of 2020 Census data was used to determine the GSWC's 2020 service area population, which was 39,169. The 2020 population and the number of residential connections served by the GSWC in 2020 were used to derive a 2020 persons per residential connection factor of 3.5. This factor was then multiplied by the GSWC's number of residential connections in 2025 to estimate the 2025 population served by the GSWC. To project the population served by the GSWC from 2030 to 2050, average annual population growth rates from SCAG projections were applied to this 2025 estimate. A GIS analysis of SCAG projection data was used to determine the SCAG growth rate specific to the GSWC's service area. SCAG projected an increase in population from 2019 to 2035 averaging 0.26% per year and from 2035 to 2050 averaging -0.02% per year. Estimated current and projected populations of the GSWC's service area are included in **Table 1-1**.

Table 1-1. Current and Projected Population

Population Served	2025	2030	2035	2040	2045	2050
Total	40,637	41,169	41,702	41,687	41,671	41,656

The estimated 2025 and projected future number of households and employees within the service area were estimated using the same approach as population. SCAG projected an increase in households from 2019 to 2035 averaging 0.54% per year and from 2035 to 2050 averaging 0.12% per year. SCAG projected an increase in employment from 2019 to 2035 averaging 0.16% per year and from 2035 to 2050 averaging 0.05% per year.

Table 1-2. SCAG Household and Employment Projections for Water Service Area

Category	2025	2030	2035	2040	2045	2050
Households	13,329	13,770	14,211	14,342	14,473	14,604
Employees	21,253	21,496	21,739	21,788	21,837	21,866

According to U.S. Census Bureau QuickFacts from 2024, the median household income in the GSWC is $125,647. The GSWC's poverty rate is 7%. The GSWC is 49% white alone, 14% Asian alone, 7% black alone, 18% two or more races, and 28% Hispanic or Latino. The average commute to work for workers at least 16 years of age is 27 minutes, which indicates that most jobs are local (United States Census Bureau, 2024). According to 2024 U.S. Census Bureau QuickFacts, GSWC's population is made up of 19% of seniors (65 years and over), 16% of persons under 18 years, and 3% of persons under 5 years. (United States Census Bureau, 2024). **Table 1-2** provides employment and household projections for the GSWC's water service area based on SCAG GIS data intersected with the water service area.

1.1.2. Land Use

Per the Fiscal Year (FY) 2024-2025 Three Valleys Municipal Water District Assessed Service Area by Land Use, GSWC Claremont System's land use distribution by parcel count is as follows:

- Single-Family Residential: 83%
- Multi-Family Residential and Condominiums: 11%
- Mobile Homes: <1%
- Commercial: 3%
- Churches: <1%
- Industrial: 1%
- Recreational Camping Facilities: <1%
- Vacant Residential: 2%
- Vacant Non-Residential: 1%

2. Water Use

This section describes the current and projected water uses within the GSWC's service area.

2.1. Water Use by Sector

2.1.1. Water Use Sectors Listed in Water Code

Water suppliers are required to identify water uses, to the extent that records are available, for at least each of the water use sectors identified in CWC 10631(d) to assist in the water demand projections. Recycled water uses are described in **Section 4.5**.

GSWC serves the following water uses:

Single Family Residential

Single family residential customers are typically on a lot with a free-standing building containing one dwelling unit that may include a detached secondary dwelling.

Multi-Family Residential

Multi-family residential customers are typically multiple dwelling units within one building or several buildings within one complex.

Landscape Irrigation

GSWC tracks the water use for landscape irrigation.

Commercial/Institutional

GSWC tracks commercial and institutional customer water uses as one. Commercial customers typically provide or distribute a product or service and institutional water customers are typically public services, such as higher-education institutions, schools, courts, churches, hospitals, government facilities, and nonprofit research institutions.

Losses

Distribution system water losses are the water losses from the point of water entry to the distribution system to the delivery point to the customer's system. Water losses are discussed in **Section 2.1.3**.

The number of active connections is shown in Table 2-1.

Table 2-1. Calendar Year 2021-2025 Connections by Customer Class

Customer Class	2021	2022	2023	2024	2025
Residential – Single Family	10,066	10,093	10,127	10,166	10,176
Residential – Multi-Family	242	244	244	248	250
Landscape Irrigation	282	283	281	282	282
Institutional/Governmental	9	9	9	10	10
Commercial	782	790	793	785	822
Total	**11,381**	**11,419**	**11,454**	**11,491**	**11,540**

2.1.2. Past and Current Water Use

GSWC serves potable water for a variety of uses, as summarized in **Table 2-2**. Over the past five years, GSWC served an average of 7,063 AFY of potable water. In 2025, 63% of the total potable water deliveries were to residential customers (56% to single-family accounts and 7% to multi-family accounts). **Table 2-2** shows the annual volume of potable water used by each customer class for 2025. Recycled water uses are described in **Section 4.5.**

Table 2-2. DWR 4-1R Actual Demands for Water, 2025, AFY

Use Type	Potable or Non-Potable (*optional)*	2025 Volume
Single Family	Potable	4,767
Multi-Family	Potable	627
Commercial	Potable	2,430
Landscape	Potable	724
Distribution System Water Loss	Potable	424
	Total	**8,972**

2.1.3. Distribution System Water Losses

Distribution system water losses are the physical potable water losses from the point of water entry to the distribution system to the point of delivery to the customer's system. Water loss can result from aging infrastructure, leaks, seepage, theft, metering inaccuracies, data handling errors, and other causes. Addressing water losses can increase water supplies and recover revenue. GSWC monitors its water loss and prepares an annual American Water Works Association (AWWA) Water Audit to estimate the volume of water loss. GSWC has submitted all required water loss audits to the State, as shown in **Table 2-3.** Copies of GSWC's recent AWWA Water Audits are provided in **Part 4, Appendix E-6**.

Table 2-3. DWR 4-5R Month Water Loss Audit Reporting

Public Water System ID # Reported in DWR Table 2-1R	Reporting Period	Submitted to DWR Water Loss Audit Program
CA1910024	2020	Yes
	2021	Yes
	2022	Yes
	2023	Yes
	2024	Yes

DWR Notes:
2020 AWWA: Claremont, Golden State Water Company - Validated Water Audit, CY2020.xls
2021 AWWA: Claremont, Golden State Water Company - Validated Water Audit, CY2021.xls
2022 AWWA: Claremont, Golden State Water Company - CY2022 - Validated Water Audit.xlsx
2023 AWWA: GSWC Claremont - CY2023 Validated Audit.xlsx
2024 AWWA: GWSC Claremont - CY2024 Validated Audit.xlsx

CWC Section 10608.34 required the State Water Resources Control Board (State Board) to develop water loss performance standards for urban retail water suppliers to minimize water waste through system leaks. Water loss performance standards were developed through a rulemaking that became effective in 2023. Under the regulations, each supplier will be required to comply, by 2028, with an individualized volumetric water loss standard based on real loss, using the economic model developed by the State Board and the supplier's own unique data. Real loss is the physical loss of water from water distribution systems, as opposed to apparent losses, which are revenue losses due to meter inaccuracies, billing errors or unauthorized consumption. A supplier's baseline water loss is calculated as the average water loss from at least 3 of the 4 water loss audits from 2017 – 2020. The real water loss performance standard is based on gallons per service connection per day (gpscd), or gallons per mile of pipe per day (gpmd), depending on how the supplier reports real loss. Post-2028 compliance with volumetric water loss standards will be assessed every three years based on the average of the supplier's real loss from the preceding three years, with an allowed variation of 5 gallons per connection per day above the supplier's water loss standard. Apparent loss standards are equal to the baseline apparent loss and compliance is evaluated at the same time as compliance with the Real Water Loss Performance Standard.

Although the compliance period has not yet started, CWC Section 10631 (d)(3)(C) requires water suppliers to provide data in the UWMP to show whether the supplier met its State Board water loss performance standard.

Over the last five years, GSWC's water losses have ranged from 3% to 11% when calculated as the difference between billed consumption and total production. To project the water loss component of future demands, GSWC assumed future water losses will be approximately 8% of total customer water use. Calculated water losses are shown in **Table 2-4.**

Based on data released by the State on January 30, 2026, GSWC's baseline real water loss is 56.1 gpscd and the real water loss standard is 45.6 gpscd, and the apparent loss standard is the baseline of 14.2 gpscd. No reduction from the baseline is required to meet the water loss standard by 2028. As shown in **Table 2-5**, based on the most recent water loss audit from 2024, the supplier met the real water loss

performance standard. **Section 8.1.5** discusses GSWC's programs to assess and manage distribution system real loss.

Table 2-4. Calculated Water Loss

Water Loss	2021	2022	2023	2024	2025
Calculated Water Loss	465	304	264	389	424
% Water Loss	11%	3%	4%	5%	5%

Table 2-5. DWR 4-6R Progress Towards 2028 Water Loss Standard

Public System ID # Reported in Submittal Table 2-1R	Did the Water Board Calculate a Water Loss Standard for this Public System?	2028 Real Water Loss Standard per Unit per day	Units for Real Water Loss Standard	Number of Units	Volume of Total Real Water Loss (from AWWA Water Loss Audit)	2025 or Most Recent Year Real Water Loss per Unit per Day	2028 Apparent Water Loss Standard per Unit per Day	Units for Apparent Water Loss	Number of Connections	Volume of Total Apparent Loss (from AWWA Water Loss Audit)	2025 or Most Recent Year Apparent Water Loss per Unit per Day
CA1910024	Yes	45.6	gpscd	11,531	276	14.2	4.9	gpscd	11,531	152	11.8

2.2. Projected Water Use

Various demand projection scenarios and conditions were considered for this UWMP. Historic demand trends and water use per connection for each connection type (single family residential, multifamily residential, commercial, etc.) were assessed along with expected growth rates to project demand through 2050. The major assumptions used to develop demand projections are listed below:

Baseline Water Use: A historic baseline period is used to approximate "normal" demand patterns representative of what is expected in the future given normal conditions for influential factors impacting demand, known as "demand drivers". A key demand driver is rainfall. Baseline years incorporate impacts of dry and wet years since demand typically fluctuates with rainfall due to the need for more irrigation in dry years and less in wet years. For this UWMP, a baseline period of 2022-2024 is used, which captures two wet years and one dry year. A baseline water use per connection was established for each connection type.

Growth Rate: Indoor residential usage is considered separately from outdoor usage since indoor use is associated with people in a housing unit and outdoor use is associated with the landscape of a housing unit. Therefore, the growth of indoor residential demand is projected to scale with SCAG-based population projections as described in **Section 1.1.1** and outdoor residential demand is projected to scale with SCAG's housing growth rates as described in **Section 1.1.1**. CII and Landscape connections were assumed to grow at the same rate of historic connection growth.

Water Loss: Losses range from 3% to 5%. The GSWC anticipates water losses will be 8% through 2050.

Total Projected Demand ("status quo"): For each connection type, the baseline water use per connection was multiplied by the projected future number of connections to estimate future water use by connection type. The water loss percent was applied to the subtotal of demand for all connection types to determine the total projected future demand. This represents a "status quo" future demand assuming demand patterns remain the same as the baseline period.

Ultimately, it was assumed that demands would follow a historic baseline trend, or "status quo" initially, but continued conservation efforts would cause demands to reduce over time toward the historically lowest gallons per capita per day (GPCD) experienced in the past four years, which was 150 GPCD in 2023. Therefore, an average of the two historic demand scenarios was used to plan for historic demand trends that account for assumed future conservation, as shown in **Figure 2-1**. **Table 2-6** presents the projected demand by customer type through 2050 for this UWMP.

Figure 2-1. Historical and Projected Demands

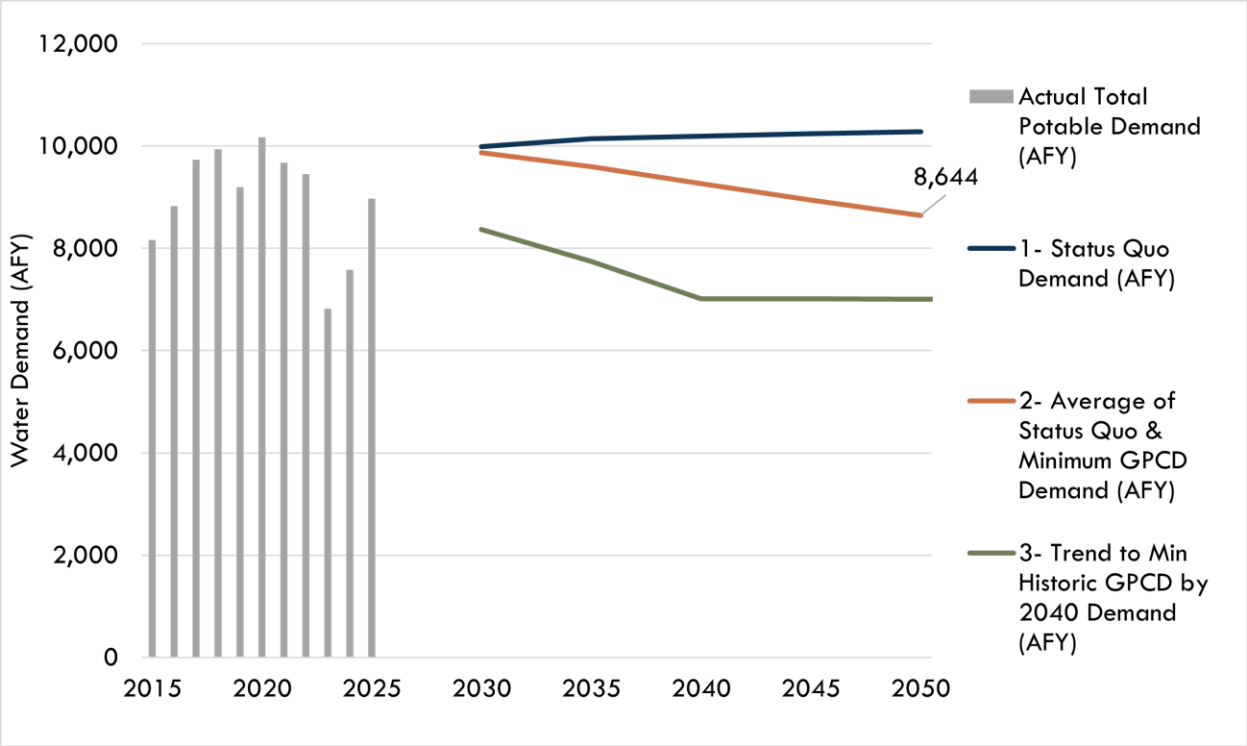


Table 2-6. DWR 4-2R Projected Demands for Water Use, AFY

Use Type	Additional Description	Level of Treatment When Delivered	Projected Water Use 2030	Projected Water Use 2035	Projected Water Use 2040	Projected Water Use 2045	Projected Water Use 2050
Single Family		Potable	5,302	5,157	4,974	4,802	4,642
Multi-Family		Potable	719	699	674	651	629
Commercial		Potable	2,645	2,572	2,481	2,395	2,315
Landscape		Potable	717	697	672	649	628
Distribution System Water Loss		Potable	491	477	460	444	430
		Total	**9,873**	**9,603**	**9,262**	**8,941**	**8,644**

Table 2-6 and **Table 2-7** satisfy the requirement to include anticipated water conservation savings when developing future demand projections for the next 25 years because they trend downward toward historically low GPCD, reflecting additional conservation savings in the future.

Senate Bill 1087 requires that water use projections in an UWMP include projected water use associated with single family and multi-family residential housing for lower income households, as identified in the housing elements of any city, county, or city and county within the supplier's service area. The Regional Housing Needs Assessment (RHNA) establishes housing needs for each jurisdiction over the applicable planning period. SCAG adopted the 6th Cycle RHNA Allocation Plan, which covers the planning period

from October 2021 through October 2029 (SCAG, March 2021). SCAG's population and household projections inform the RHNA Allocation Plan and are used in the determination and allocation of housing needs, including lower income housing, for individual jurisdictions. The growth projections in this UWMP are based on SCAG projections for the service area and therefore also incorporate the lower income housing projections. The projected demands in this UWMP represent water use from all future growth and are inclusive of water use for lower income households

Table 2-7. DWR 4-3R Inclusion in Water Use Projections

Question	Yes or No
Are Future Water Savings Included in Projections?	Yes
Are Lower Income Residential Demands Included in Projections?	Yes

2.3. Climate Change Considerations

A topic of growing concern for water planners and managers is climate change and the potential impacts it could have on California's future water supplies. A recent Climate Change Vulnerability Assessment utilizing data from DWR and 20 global climate models suggests that a changing climate will have multiple effects on the Region. Adaptation and mitigation measures will be necessary to account for these effects. **Part 1 Chapter 2** of the 2025 RUWMP includes an assessment of the potential impacts of climate change.

3. SB X7-7 Compliance & Future Water Use Efficiency Requirements

This section describes compliance with the Water Conservation Act of 2009, also known as Senate Bill 7 of Special Extended Session 7 (SBX7-7). The section demonstrates compliance with the 2020 SBX7-7 target and discusses future water use efficiency requirements.

3.1. Compliance and Future Water Use Efficiency Requirements

SBX7-7 was incorporated into the UWMP Act in 2009 and required that all water suppliers increase water use efficiency with the overall goal to decrease per-capita water consumption within the state by 20 percent by the year 2020.

SBX7-7 required DWR to develop certain criteria, methods, and standard reporting forms through a public process that water suppliers could use to establish their baseline water use and determine their water conservation targets. SBX7-7 and DWR's Methodologies for Calculating Baseline and Compliance Urban Per Capita Water Use (DWR, March 2021) specify methodologies for determining the baseline water demand, 2015 interim urban water use target, and the 2020 urban water use target for GSWC as described in the 2020 UWMP. This section also demonstrates that GSWC achieved its 2020 water use target.

Table 3-1 below establishes GSWC's 2020 actual and 2020 target GPCD. As shown, GSWC met its 2020 target. Most recently, in 2025, the water use was 197 GPCD, which is well below the 2020 target of 265 GPCD.

Table 3-1. SB X7-7 2020 Target Progress

2020 Target GPCD	2020 Actual GPCD	Did Supplier Achieve Target?
265	247	Yes

New water use efficiency standards from the CWOL Regulation supersede SBX7-7 standards. In 2018, two policy bills were enacted by the California Legislature, Assembly Bill 1668 (AB1668, Friedman) and Senate Bill 606 (SB606, Hertzberg), collectively referred to as the "2018 Water Conservation Legislation." Based on the 2018 Water Conservation Legislation, related legislation, and subsequent adoption of the CWOL Regulation, each urban retail water supplier must comply with its urban water use objective (UWUO). The UWUO is the sum of standards for indoor residential water; outdoor residential water use; commercial, industrial, and institutional (CII) landscape areas irrigated with dedicated meters; water losses; variances (if applicable); and bonus incentives for potable reuse (if applicable). DWR and the State Board have developed a reporting framework for calculating the UWUO and compliance annually with efficiency standards becoming increasingly stringent through 2040.

The demand projections in this UWMP plan for supply reliability if demands continue in alignment with historic patterns, but GSWC separately estimates its UWUO in order to plan and implement demand management measures (described in **Section 8**) to support meeting the UWUO. DMMs and UWUO

compliance planning enhance resiliency for drought and other water shortage conditions as described in **Sections 5, 7,** and **8**.

4. Water Supply

GSWC utilizes three primary sources for water supply: treated imported surface water purchased from MWD through TVMWD, treated water purchased from City of Upland, and groundwater pumped from the Chino Basin and Six Basins. More information about local surface water and groundwater basins is included in **Part 1 Chapter 3** of the 2025 RUWMP.

4.1. Purchased or Imported Water

4.1.1. Three Valleys Municipal Water District

GSWC purchases treated imported water from MWD through TVMWD. MWD imports water from the Colorado River through the Colorado River Aqueduct (CRA), owned and operated by MWD, and the State Water Project (SWP), which utilizes the CRA for transmission to Southern California. Water delivered to TVMWD's member agencies can receive treated imported water from MWD's Weymouth Treatment Plant located in the City of La Verne or from TVMWD's Miramar Water Treatment Plant located in the City of Claremont.

GSWC's treated imported water supplies from MWD, through TVMWD, may be impacted during a multi-year drought or other conditions which limits MWD from delivering sufficient water supplies to all its member agencies, and consequently to GSWC. A description of this supply and its reliability is provided in **Part 1 Chapter 3** and **Chapter 5** of the 2025 RUWMP**.**

4.1.2. City of Upland

GSWC purchases treated water from the City of Upland. GSWC has an interconnection with the City of Upland that provides for water exchanges between the two agencies. This interconnection is at Claremont Avenue and 6th Street within GSWC's service area with an estimated capacity of 1,500 GPM. While this interconnection provides operational flexibility and emergency redundancy, GSWC-Claremont does not rely on it for baseload supply. As such, historical and projected normal-year deliveries from this source are 0 AF.

4.2. Groundwater

GSWC can extract groundwater from two regional groundwater basins: Six Basins and Chino Basin. Both basins have been adjudicated and are managed for long-term sustainability, as discussed further in **Part 1, Chapter 3** of the 2025 RUWMP**.**

4.2.1. Six Basins

GSWC produces groundwater from Six Basins. Six Basins is a group of six interconnected groundwater basins that underlie areas of the Cities of Claremont, La Verne, Pomona, and Upland, and surrounding

unincorporated areas of Los Angeles and San Bernardino Counties. GSWC currently produces groundwater from 12 wells located in Six Basins.

As detailed in **Part 1, Section 3.2.3**, the Six Basins are adjudicated and managed by the Six Basins Watermaster. GSWC pumps from the Canyon, Upper Claremont Heights, Lower Claremont Heights, and Pomona Basins (collectively referred to as the "Four Basins"), which are subject to an Operating Safe Yield (OSY) determined annually by the Watermaster.

GSWC's percent share of the OSY is 34.741 percent for use of groundwater in the Four Basins. In addition, GSWC has historically secured rights under long-term lease from the City of Claremont (2.77%) and Pomona College (1.85%). According to the Six Basins Watermaster Annual Report for Calendar Year 2024, with these leases included, GSWC's total available groundwater right in the Six Basins is 39.36% of the OSY. GSWC also has additional groundwater rights through ownership in West End Consolidated Water Company (WECWC). **Table 4-1** quantifies GSWC's total combined pumping allocation rights in the Six Basins over the last five years.

Table 4-1. GSWC Total Six Basins Pumping Allocation (AF)

Calendar Year	Base OSY Share (34.74%)	Leased Share (4.62%)	Total Available Pumping Right (39.36%)
2021	4,516	601	5,117
2022	4,516	601	5,117
2023	4,516	601	5,117
2024	4,690	624	5,314
2025	4,864	647	5,511

4.2.2. Chino Basin

GSWC currently produces groundwater from the Chino Basin, which is a sub-basin of the Upper Santa Ana Valley Groundwater Basin and is managed by the Chino Basin Watermaster.

The Chino Basin Judgment originally established a Safe Yield for the Chino Basin of 140,000 AFY. Pursuant to the most recent Safe Yield reset effective in 2020, the Safe Yield in the Chino Basin is currently 131,000 AFY (July 1 to June 30). The Safe Yield is recalculated every 10 years and is defined in the Chino Basin Judgment as "the long-term average annual quantity of ground water (excluding replenishment of stored water but including return flow to the Basin from use of replenishment or stored water) which can be produced from the Chino Basin under conditions of a particular year without causing an undesirable result". The Chino Basin Judgment's allocation of the Safe Yield includes three separate Pools: (1) the "Overlying Agricultural Pool"; (2) the "Overlying Non-Agricultural Pool"; and (3) the "Appropriative Pool".

GSWC's percent share of the OSY is 0.75 percent. GSWC's available groundwater supply can be augmented by the annual reallocation of unpumped water from the Agricultural Pool to Appropriative Pool, which varies from year to year, as described in **Part 1, Section 3.2.2**. GSWC is also permitted to

extract groundwater in excess of its annual allocation and carryover rights, provided it pays a Replenishment Assessment to the Chino Basin Watermaster.

Table 4-2 summarizes GSWC's actual groundwater production over the past five years. Pumping volumes fluctuate annually based on total system demand, the availability of surface water, and local hydrological conditions.

Table 4-2. DWR 6-1R Groundwater Pumped Last Five Years (AF)

Groundwater Type	Location or Basin Name	2021	2022	2023	2024	2025
Alluvial Basin	Six Basins	4,143	4,150	3,286	2,908	3,389
Alluvial Basin	Chino Basin	1,073	1,065	921	990	938
	Total	**5,216**	**5,215**	**4,207**	**3,898**	**4,326**

4.3. Surface Water

GSWC does not directly use surface water to meet its water demands.

4.4. Stormwater

GSWC does not directly use stormwater to meet its water demands.

4.5. Wastewater and Recycled Water

Wastewater generated by GSWC is treated by Los Angeles County Sanitation District (LACSD). Wastewater is collected within GSWC's local sewer collection system. GSWC's local sewers tie into one of LACSD's regional trunk sewers. The regional trunk sewer lines deliver wastewater to Pomona Water Reclamation Plant (PWRP) and the A.K. Warren Water Resource Facility (formerly known as the Joint Water Pollution Control Plant); however, the percentage breakdown between these two plants in treating GSWC's wastewater is unknown. The water reclamation plants are not located within GSWC's service area.

To align with current conservation realities and CWOL framework, wastewater generation is estimated utilizing the State's 2025 indoor residential water use standard of 47 GPCD (as indoor water use serves as the direct proxy for wastewater generation). Based on GSWC's 2025 population of 40,637, the estimated amount of wastewater collected by GSWC is approximately 1.91 MGD (about 2,139 AFY). **Table 4-3** shows existing wastewater collection and treatment at LACSD.

GSWC does not have access to recycled water supplies due to the lack of infrastructure to convey recycled water to GSWC. Subject to availability of recycled water, GSWC would have to construct transmission and distribution facilities to deliver recycled water to customers within its service area.

4.5.1. Potential, Current, and Projected Recycled Water Uses

Currently, the wastewater collected from GSWC and treated at PWRP is used by recycled water customers that are not part of GSWC's service area boundaries.

Table 4-3. DWR 6-2R Wastewater Collected within Service Area in 2025 (AF)

Wastewater Collection			Recipient of Collected Wastewater	
Name of Wastewater Collection Agency	**Wastewater Volume Metered or Estimated**	**Volume of Wastewater Collected from UWMP Service Area 2025**	**Name of Wastewater Treatment Plant (WWTP) and Place ID Number**	**Is WWTP Located Within UWMP Area?**
LACSD	Estimated	2,139	PWRP (Place ID 250700), A.K. Warren Water Resource Facility (Place ID 234156)	No
	Total	**2,139**		

4.6. Water Exchanges and Transfers

GSWC does not have any current or planned water exchange opportunities. However, TVMWD participates in MWD's Dry-Year Yield Program (DYYP). The DYYP is a groundwater storage and recovery program where supplemental water is stored in the Chino Basin during surplus years and could be recovered in-lieu of imported water from MWD through Inland Empire Utilities Agency (IEUA). The DYYP allows maximum use of imported water supplies available during wet years and stored groundwater in the Chino Basin during dry years. The DYYP can store up to 100,000 AF with maximum replenishment of 25,000 AFY and maximum extraction of 33,000 AFY. Based on the Chino Basin Watermaster 2024/2025 Assessment Package, during FY 2023-2024, there was 45,908.2 AF within the DYYP account. The agreement that authorized the DYYP will expire in 2028.

As described in **Part 1, Section 3.2.3**, water rights under the Six Basins Judgment can be transferred by assignment, sale, contract, or lease so long as such transfers meet the requirements of the Judgment. GWSC is able to utilize these transfer opportunities available for Six Basins water when necessary.

4.7. Future Water Projects

While the current water supply portfolio is sufficient to meet existing and projected demands, GSWC has identified improvement projects that will help maintain water system reliability as facilities age and as localized demand patterns shift.

GSWC has identified several planned projects that will support long-term water supply reliability for the Claremont System. These projects are outlined in GSWC's 2022 Claremont Master Plan, where each project is assigned a unique identification number and prioritized as short-term, mid-term, or long-term. The planned improvements include water quality enhancement projects, plant facility upgrades, and pipeline replacements, all informed by condition assessments performed by GSWC Operations and Planning staff.

In addition to internal capital projects, GSWC participated in the development of regional supply initiatives through the TVMWD Water Resources Master Plan (WRMP) and Drought Contingency Plan (DCP). Four regional water supply projects were identified in the WRMP and DCP effort through collaboration with TVMWD, member agencies, and regional stakeholders. These regional projects, described in **Part 1, Chapter 3**, are intended to enhance overall supply reliability for the region.

- Project 1: External Partnership with Covina Valley Water Company – Main Basin
- Project 2: TVMWD Groundwater Reliability Improvement Program (GRIP)
- Project 3: TVMWD Storing Water in Main San Gabriel Basin (GRIP+)
- Project 4: TVMWD–Pomona Chino Basin Conjunctive Use Exchange

As development continues within the service area and future demands increase, GSWC will continue evaluating and implementing additional projects that support water supply reliability, operational efficiency, and long-term system resilience.

4.8. Summary of Existing and Planned Sources of Water

GSWC's water supply is comprised of treated imported water, local surface water, and groundwater. The volume of water utilized from each source in 2025 is shown in **Table 4-4** and projected supply is shown in **Table 4-5**.

Table 4-4. DWR 6-8R Actual Water Supplies in 2025 (AF)

Water Supply	Additional Detail on Water Supply	2025 Actual Volume	2025 Potable or Non-Potable (optional)	2025 Total Entitlement (optional)
Groundwater (not desalinated)	Chino Basin	938	Potable	
Groundwater (not desalinated)	Six Basins	3,389	Potable	
Purchased or Imported Water	City of Upland	0	Potable	
Purchased or Imported Water	Metropolitan Water District – TVMWD	4,645	Potable	
	Total	**8,972**		

Supply Projection Methodology

To project future water supplies accurately and conservatively, GSWC, in coordination with TVMWD, evaluated supply projection methodologies. Rather than projecting supplies based on maximum legal entitlements or absolute physical extraction capacity, GSWC opted to utilize a "Real Water" (Utilization-Based) approach. This approach grounds future projections in empirical operational reality. The methodology utilized a baseline representing GSWC's average local supply utilization over the most recent five-year period (2021–2025), which was 8,635 acre-feet per year (AFY). This baseline smoothed out historically dry years (e.g., 2021) and historically wet years (e.g., 2023).

To calculate the projected supplies shown in **Table 4-5**, the following steps were applied:

1. **Climate Change Adjustments:** Specific climate change vulnerability factors, derived from TVMWD' 2024 Climate Vulnerability Analysis, were applied to the 2021-2025 baseline local agency supplies (Chino Basin groundwater and Six Basins groundwater) to forecast anticipated local yields through 2050.
2. **Imported Water Reliance:** The projected local supplies were then compared against GSWC's projected demand. Any projected unmet demand is assumed to be fulfilled by imported water purchases from TVMWD.

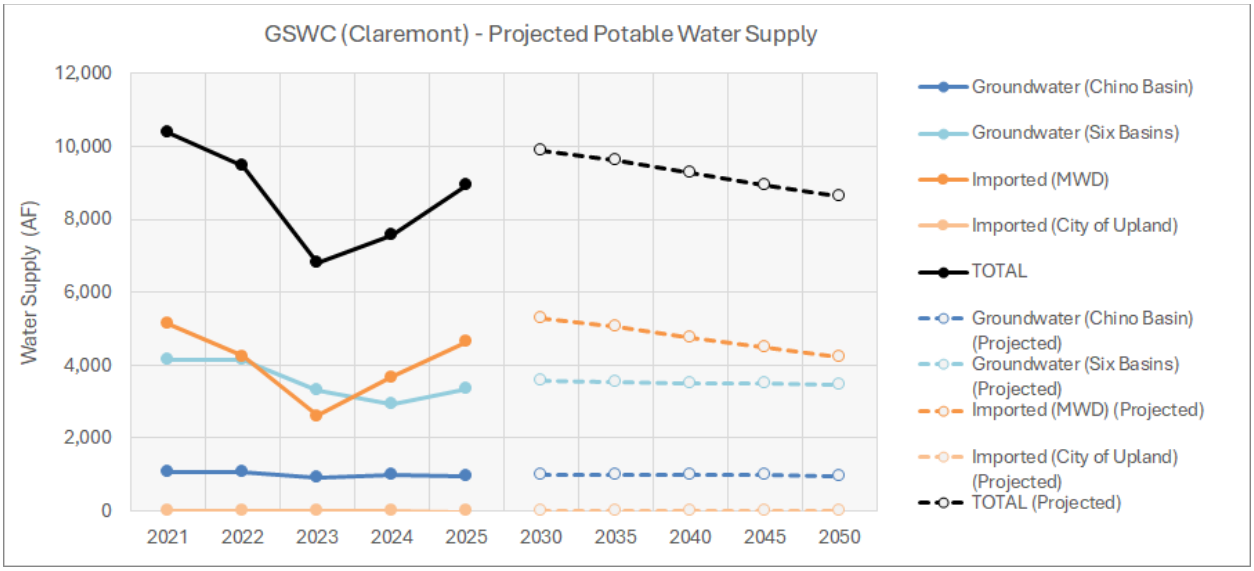
As shown in **Table 4-5** and **Figure 4-1**, GSWC's reliance on local groundwater from the Six Basins and Chino Basin is projected to decrease slightly over time under a climate change planning scenario that models potential impacts to local hydrology. Under this specific scenario, imported water purchases from TVMWD are projected to increase modestly to balance GSWC's overall supply portfolio and meet customer demands. It is important to note that these projections are intended for long-term

vulnerability planning purposes only; they do not incorporate future adaptation or mitigation strategies currently being developed or implemented at the regional level. Future actions, such as those identified in the DCP, are specifically designed to reduce or offset these potential climate-related impacts to local groundwater supplies. (Note: While GSWC maintains an interconnection with the City of Upland for operational flexibility and emergency redundancy, it is not relied upon for baseload supply; therefore, projected normal-year volumes from this source are 0 AF).

Table 4-5. DWR 6-9R Projected Water Supplies (AF)

Water Supply	Additional Detail on Water Supply	2030	2035	2040	2045	2050
Groundwater (not desalinated)	Chino Basin	1,003	990	981	973	965
Groundwater (not desalinated)	Six Basins	3,590	3,544	3,511	3,483	3,454
Purchased or Imported Water	Metropolitan Water District – TVMWD	5,280	5,069	4,769	4,485	4,224
Purchased or Imported Water	City of Upland	0	0	0	0	0
	Total	**9,873**	**9,603**	**9,262**	**8,941**	**8,644**

Figure 4-1. GSWC Projected Supply and Demand Comparison (AF)



4.9. Energy Intensity of Water Supplies

Reporting water energy intensity has many benefits for water utilities and their customers including:

- Identifying energy saving opportunities as energy consumption is often a large portion of the cost of delivering water.
- Calculating energy savings and greenhouse gas (GHGs) emissions reductions associated with water conservation programs.

- Potential opportunities for receiving energy efficiency funding for water conservation programs.
- Informing climate change mitigation strategies.
- Benchmarking of energy use at each water acquisition and delivery step and the ability to compare energy use among similar agencies.

In 2025, GSWC consumed 666.54 kWh of energy for water facilities per AF of water delivered.

5. Water Service Reliability Assessment

This section considers GSWC's water supply reliability during normal years, single dry years, and up to 5 consecutive dry water years. The supply reliability assessment discusses factors that could potentially limit the expected quantity of water available from GSWC's current source of supply through 2050.

5.1. Constraints on Water Sources

While GSWC maintains a highly reliable water portfolio, its supply sources are subject to various environmental, regulatory, and infrastructural constraints. A comprehensive analysis of regional water supply constraints is provided in **Part 1, Chapter 3** and **Part 1, Chapter 5** of this RUWMP.

For GSWC – Claremont System specifically, the primary constraints on water sources include:

- **SWP-Dependent Infrastructure:** Due to pipeline elevations and regional network hydraulics, portions of the GSWC service area are situated within a "SWP-Dependent Area." This means GSWC is served by the Rialto Pipeline and TVMWD's Miramar Water Treatment Plant, which cannot physically receive treated Colorado River water from the CRA and rely entirely on SWP flows. As detailed in **Part 1, Section 3.1.2**, MWD typically buffers SWP allocation cuts using regional storage and its Water Supply Allocation Plan (WSAP). However, during severe multi-year droughts, physical limitations in delivering stored water to the Rialto Pipeline can trigger localized shortages and emergency mandates (such as the 2022 SWP-Dependent Area Emergency Conservation Program). Consequently, during severe multi-year droughts when SWP allocations are drastically reduced by the State, GSWC relies more on its local groundwater reserves and its emergency interconnection with the City of Upland to offset imported water constraints.
- **Groundwater Quality:** Contaminants of Emerging Concern (CECs), such as PFAS, as well as legacy Volatile Organic Compounds (VOCs) and nitrates in the Six Basins and Chino Basin, can force GSWC to temporarily remove active extraction wells from service. To mitigate this constraint and maintain reliable local extraction capacity, GSWC actively monitors its wellfield and invests in long-term capital improvement projects as detailed in **Section 4.7**.
- **Basin Adjudication and Climate Change:** GSWC's local supply is heavily dependent on groundwater from the Six Basins and Chino Basin. Extractions from these basins are legally constrained by court judgments and managed via OSYs and Safe Yields determined by their respective Watermasters. As described in **Part 1, Section 2.5**, prolonged droughts and climate-driven volatility reduce natural basin recharge. This can result in lowered OSY determinations. While paying assessments to purchase imported replacement water for extractions exceeding OSY is a standard component of normal basin operations, chronically lowered OSYs force GSWC to rely more heavily on this mechanism, particularly when the availability of imported replacement water required by the Watermasters may already be more constrained (and, therefore, more expensive), such as during severe multi-year droughts.

5.2. Year Type Characterization

In general, groundwater is less vulnerable to seasonal and climatic changes than surface water (i.e. local and imported) supplies. The Six Basins and Chino Basin Watermasters monitor groundwater levels and implement supplemental recharge programs to maintain the long-term sustainability of local groundwater sources. Further discussion of regional water resource management is included in **Part 1, Chapter 3** of the 2025 RUWMP.

Because GSWC's baseline years are a mix of different hydrologic conditions, it is important to note how their supply strategy adapts to dry years. GSWC's primary groundwater supplies, the Six Basins and the Chino Basin, have variable OSYs that may decline during dry periods. However, under the respective adjudication frameworks for these basins, GSWC can legally and physically continue to produce the water it needs to meet elevated dry-year demands by paying replacement or replenishment water assessments for any production that exceeds its rights. As a result, GSWC's operational supply strategy is not significantly different in dry years compared to normal years. The changes in GSWC's projected baseline supply over time are primarily driven by long-term climate change factors (as detailed in **Section 4.8**) and planned infrastructure projects.

Per UWMP requirements, GSWC has evaluated reliability for an average year, single dry year, and a five consecutive dry year period. The UWMP Act defines these years as:

- **Normal Year:** This condition represents the water supplies a supplier considers available during normal conditions. This could be a single year or averaged range of years that most closely represents the average water supply available.
- **Single Dry Year:** The single dry year is recommended to be the year that represents the lowest water supply available.
- **Five-Consecutive Year Drought:** The driest five-year historical sequence for the Supplier, which may be the lowest average water supply available for five years in a row.

To characterize these year types, GSWC evaluated historical supply and demand data. For the purposes of this 2025 UWMP, GSWC established a "Normal Year" baseline using the average annual supply and demand from 2021 through 2025.

Because water demand typically increases during dry years due to elevated outdoor irrigation needs, the "Single Dry Year" and "Five-Year Drought" scenarios are modeled using historical years where production peaked to meet elevated drought demands. **Table 5-1** summarizes the base years utilized for this analysis and the corresponding volume of water available/utilized as a percentage of the average year.

Table 5-1. DWR 7-1R Basis of Water Year Data

Year Type	Base Year (FY)	Volume Available (AF)	% of Average Supply
Average Year	2021-2025	8,635	100%
Single-Dry Year	2021	10,370	120%
Consecutive Dry Years 1st Year	2018	9,979	116%
Consecutive Dry Years 2nd Year	2019	9,214	107%
Consecutive Dry Years 3rd Year	2020	10,175	118%
Consecutive Dry Years 4th Year	2021	10,370	120%
Consecutive Dry Years 5th Year	2022	9,460	110%

5.3. Water Service Reliability

The results of the reliability assessment are summarized below.

As established in **Section 4.8**, GSWC utilized the "Real Water" (Utilization-Based) methodology to project its future supplies. Under this operational approach, GSWC projects its local groundwater supplies from the Six Basins and Chino Basin based on historical averages adjusted for anticipated climate change impacts. Any remaining unmet demand is fulfilled by purchasing imported water from TVMWD.

GSWC's projected "Normal Year" water demands over the next 25 years were developed using a demand-per-connection approach as discussed in **Section 4.8** and **Section 5.2**. This approach utilizes a baseline period of 2025 to approximate normal demand patterns, projects future connections based on SCAG growth rates and incorporates anticipated reductions due to passive conservation and compliance with the new "Making Conservation a California Way of Life" (CWOL) regulatory framework.

To estimate projected demands during drought conditions, the GSWC utilized a historical ratio methodology. Because water demand in Southern California typically increases during hot, dry periods due to elevated outdoor irrigation needs, GSWC analyzed the ratio of total water utilized during historical dry periods compared to a historical average year.

Based on GSWC's operational data, the historical average year baseline was established using the five-year period of FY 2021–2025 (averaging 8,635 AFY).

- **Single Dry Year Scaling:** The ratio of water utilized during the historical single dry year of FY 2021 (10,370 AF) to the historical average (8,635 AF) yielded a scaling factor of 120 percent. This **120%** factor was applied to the projected normal year demands to estimate GSWC's projected water demands during future single dry years.
- **Five-Year Drought Scaling:** To estimate demands during a five-consecutive-year drought, GSWC utilized the historical drought sequence from FY 2018 through FY 2022. The ratio of water utilized in each of these years (9,979 AF, 9,214 AF, 10,175 AF, 10,370 AF, and 9,460 AF, respectively) compared to the historical average yielded scaling factors of **116%, 107%, 118%, 120%, and 110%** for years one through five of the drought sequence, respectively. These factors were applied to the projected normal year demands to forecast future multi-year drought demands.

Because TVMWD and MWD have demonstrated 100% supply reliability to meet wholesale demands through 2050 (supported by MWD's 2025 UWMP supply reliability analysis (MWD, 2026)), GSWC's total supply is projected to perfectly meet its total projected demand across all hydrologic scenarios. Consequently, the difference between supply and demand in the tables below is zero, reflecting a fully reliable water portfolio through the 2050 planning horizon.

Table 5-2, **Table 5-3**, and **Table 5-4** summarize GSWC's projected water supplies and demands over the next 25 years in five-year increments. These tables demonstrate GSWC can reliably meet elevated water demands during normal years, single dry years, and five-consecutive-year drought periods over the next 25 years.

Table 5-2. DWR 7-2R Normal Year Supply and Demand Comparison (AF)

Totals	2030	2035	2040	2045	2050
Supply totals	9,873	9,603	9,262	8,941	8,644
Demand totals	9,873	9,603	9,262	8,941	8,644
Difference	0	0	0	0	0

Table 5-3. DWR 7-3R Single Dry Year Supply and Demand Comparison (AF)

Totals	2030	2035	2040	2045	2050
Supply totals	11,857	11,533	11,123	10,738	10,381
Demand totals	11,857	11,533	11,123	10,738	10,381
Difference	0	0	0	0	0

Table 5-4. DWR 7-4R Multiple Dry Years Supply and Demand Comparison (AF)

Year	Totals	2030	2035	2040	2045	2050
First Year	Supply Totals	11,410	11,098	10,704	10,333	9,990
	Demand Totals	11,410	11,098	10,704	10,333	9,990
	Difference	**0**	**0**	**0**	**0**	**0**
Second Year	Supply Totals	10,536	10,247	9,884	9,541	9,224
	Demand Totals	10,536	10,247	9,884	9,541	9,224
	Difference	**0**	**0**	**0**	**0**	**0**
Third Year	Supply Totals	11,634	11,316	10,914	10,536	10,186
	Demand Totals	11,634	11,316	10,914	10,536	10,186
	Difference	**0**	**0**	**0**	**0**	**0**
Fourth Year	Supply Totals	11,857	11,533	11,123	10,738	10,381
	Demand Totals	11,857	11,533	11,123	10,738	10,381
	Difference	**0**	**0**	**0**	**0**	**0**
Fifth Year	Supply Totals	10,817	10,521	10,148	9,796	9,471
	Demand Totals	10,817	10,521	10,148	9,796	9,471
	Difference	**0**	**0**	**0**	**0**	**0**

6. Drought Risk Assessment

The Drought Risk Assessment (DRA) is an analysis required for the 2025 UWMP, with a focus on the five-year consecutive drought scenario beginning in 2026. While Section 5 evaluated long-term reliability through 2050, the DRA serves as an immediate stress test, focusing specifically on the five-year period from 2026 through 2030. The purpose of this assessment is to determine if GSWC anticipates any supply shortages in the immediate future that would necessitate triggering mandatory demand reduction measures outlined in the Water Shortage Contingency Plan.

6.1. Data, Methods, and Basis for Water Shortage Conditions

To conduct the DRA, GSWC utilized the same "Real Water" supply methodology and historical drought scaling factors detailed in **Section 4.8** and **Section 5**. The assessment simulates a severe, five-consecutive-year drought mirroring the hydrology of Fiscal Years 2018 through 2022.

Because hot, dry weather drives increases in outdoor irrigation, GSWC's unconstrained demands are projected to scale up significantly during this period (up to 120% of average baseline demand, as established in **Section 5.3**). The DRA tests whether GSWC's local groundwater and imported water portfolios can sustain these elevated demands over the next five years without natural replenishment.

6.2. DRA Water Source Reliability

GSWC's near-term reliability is highly secure due to the active management of the Six Basins and Chino Basin, and the unprecedented storage reserves held by its wholesale providers.

Entering the 2026–2030 DRA period, MWD holds nearly 4 million acre-feet (MAF) of water in regional storage, which is a near-record high. MWD's 2025 UWMP DRA modeling confirms that even if the SWP and CRA experience five consecutive years of severe constraint, MWD has sufficient stored reserves to meet all wholesale member agency demands without shortage allocations through 2030. Consequently, TVMWD can reliably supply GSWC with imported water to cover any deficits caused by constrained local groundwater production.

6.3. Total Water Supply and Use Comparison

Table 6-1 details the DRA for the 2026–2030 period. As demonstrated in the table, GSWC's projected supplies are sufficient to fully and consistently meet the elevated, unconstrained demands for every year of the five-year drought sequence.

Because GSWC anticipates a supply surplus (a difference of zero) across all five years of the near-term drought scenario, GSWC does not currently project a need to implement mandatory, extraordinary conservation measures or trigger advanced stages of its WSCP due to supply shortages. However, GSWC remains committed to ongoing water conservation and will continue to enforce standard water waste prohibitions to preserve regional storage.

Table 6-1. DWR 7-5 Five-Year Drought Risk Assessment (AF)

Category	2026	2027	2028	2029	2030
Total Water Use (Demand)	11,410	10,536	11,634	11,857	10,817
Total Supplies	11,410	10,536	11,634	11,857	10,817
Surplus/Shortfall without WSCP Action	0	0	0	0	0
Planned WSCP Actions (use reduction and supply augmentation)					
WSCP – Supply Augmentation Benefit	0	0	0	0	0
WSCP – Use Reduction Savings Benefit	0	0	0	0	0
Revised Surplus/(Shortfall)	0	0	0	0	0
Resulting % Use Reduction from WSCP Action	**0%**	**0%**	**0%**	**0%**	**0%**

7. Water Shortage Contingency Plan

The Water Shortage Contingency Plan (WSCP) is a strategic plan developed by GSWC to proactively manage and respond to both anticipated and unforeseen water shortages. A water shortage is defined as a condition in which available water supplies are inadequate to meet expected customer demand at a specific point in time. Such shortages may result from various factors, including but not limited to, water supply quality changes, climate change, drought, regional power outage, and catastrophic events (e.g., earthquake). Additionally, the State may declare a statewide drought emergency and mandate that water suppliers reduce demand.

GSWC's WSCP is a detailed approach which presents how GSWC intends to act, or respond, in the case of an actual water shortage. It outlines a process for conducting annual water supply and demand assessments and establishes clearly defined stages and response measures to respond to actual conditions. This level of preparedness enhances transparency, ensures accountability, and GSWC's ability to maintain reliable water service during periods of supply disruption.

The WSCP was prepared in conjunction with the 2025 RUWMP and is presented as a standalone document that may be updated as necessary. No substantive changes have been incorporated into the 2025 WSCP compared to the 2020 version. Minor editorial updates were made for clarity and consistency; however, the content, procedures, and response actions remain relatively unchanged.

The GSWC's WSCP is included in **Part 4, Appendix E-7**.

8. Demand Management Measures

The Demand Management Measures (DMMs) section provides a comprehensive description of the water conservation programs that GSWC has implemented for the past five years, is currently implementing, and plans to implement in order to reduce demand. GSWC met the 2025 Water Use Target through the implementation of these DMMs. GSWC expects to continue to implement current conservation programs to encourage conservation and achieve its water use targets.

8.1. Existing Demand Management Measures

8.1.1. Water Waste Prevention Ordinances

GSWC supports local agencies and cities in efforts to adopt ordinances which will reduce water waste. Such ordinances include the City of Claremont's Ordinances No. 2009-10 and No. 2010-02, pertaining to regulations on water conservation. GSWC also implements CPUC-approved rules including Rule 14.1 ("Water Conservation and Reduction Plan"), Schedule No. 14.1 ("Water Shortage Contingency Plan With Staged Mandatory Restrictions, Reductions And Drought Surcharges"), Schedule 14.1-CM ("Staged Mandatory Conservation and Rationing"), and Rule No. 20 ("Water Conservation), which prohibit water waste. Copies of these ordinances and the CPUC documents are provided in **Part 4, Appendix E-4**.

The City of Claremont adopted Ordinance No. 2009-10 ("Water Conservation and Water Supply Shortage Program and Regulations") in July 2009 to reduce water consumption by establishing water use restrictions including limitations on watering hours, watering duration, excessive runoff, washing down of hard surfaces, excessive pipeline leaks, and washing vehicles. Ordinance No. 2010-02 was adopted in March 2010 to establish water efficient landscape regulations and includes provisions for water management and water waste prevention for existing landscapes.

GSWC's Rule 14.1, when in effect, sets forth the procedures to implement the following water conservation restrictions:

- Use of potable water for non-essential or unauthorized purposes, as defined by State law or local ordinances, is prohibited.
- Failure to repair leaks or system malfunctions within 48 hours of notification by the utility may result in service termination, unless alternate arrangements are approved by the utility.
- Outdoor irrigation that causes runoff onto adjacent properties, non-irrigated areas, sidewalks, streets, parking areas, or structures is prohibited.
- Washing vehicles with potable water is prohibited unless a hose with an automatic shut-off nozzle is used.
- Use of potable water to wash buildings or hard surfaces (e.g., sidewalks, patios, courts) is prohibited except when required to protect public health or safety.

- Use of potable water for street washing is prohibited, except for initial construction wash-down when street sweeping is not feasible or for public health and safety purposes.
- Use of potable water in decorative fountains or water features is prohibited unless the system recirculates water.
- Irrigation of non-functional turf at commercial, industrial, or institutional sites using potable water is prohibited.
- Outdoor watering during prohibited hours or within 48 hours after measurable rainfall (0.1 inches or more) is prohibited.
- Use of potable water to irrigate ornamental turf on public street medians is prohibited.

Schedule 14.1-CM, when activated, imposes the mandatory conservation restrictions above and/or declares a level of water shortage which allows customer surcharges and reductions in water use (as discussed in the WSCP, provided in **Part 4, Appendix E-7**). The most current Schedule 14.1-CM was activated in 2021 and deactivated in 2023.

CPUC's Rule No. 20 discourages wasteful use of water and promotes the use of water saving devices. The stated purpose of the rule is to "ensure that water resources available to the utility are put to a reasonable beneficial use and that the benefits of the utility's water supply and service extend to the largest number of persons."

GSWC's most recent adoptions for Water Waste Prevention Ordinances are as shown:

Effective Dates:
Rule 14.1 - November 3, 2022
Schedule 14.1 - June 26, 2022
Rule 20 - February 2, 2015

8.1.2. Metering

GSWC meters all customer connections, including separate metering for single-family residential, commercial, industrial, and landscape customers. Furthermore, if there is new development within GSWC, each facility is individually metered. Service charges for GSWC are based on the customers' connection size. Further information regarding GSWC's service fees and conservation pricing is provided in **Section 8.1.3**.

GSWC has continuously metered all connections over the last five years.

8.1.3. Conservation Pricing

Beginning September 1, 2009, GSWC implemented a tiered conservation pricing rate structure for residential customers as approved by the CPUC. GSWC's current water rate structure is tiered to promote water conservation by customers. Single family residential customers are billed on an inclining block rate structure, with a fixed service charge based on meter size to encourage water conservation

and discourage waste. The rate structure includes three tiers. GSWC also has an inclining drought emergency surcharge pursuant to Schedule 14.1-CM ("Staged Mandatory Conservation and Rationing") when activated upon CPUC approval.

GSWC has continuously implemented conservation pricing for customer billing in accordance with its current rate schedule over the last five years.

8.1.4. Public Education and Outreach

GSWC offers public information programs for its customers. GSWC provides marketing and outreach materials to its customers by issuing press releases, publishing quarterly newsletters, using door tags, and sending bill inserts. Customers learn about rebates and additional programs through GSWC's website.

GSWC promotes water conservation through brochures, posters, activity booklets, public outreach displays, oral presentations, and workshops to inform the public. GSWC also raises awareness through paid advertising, press releases, news ads, media events, and through the Speaker's Bureau.

GSWC regularly conducts water conservation school education programs through the Discovery Science Center for Claremont elementary schools with an annual budget approved by CPUC. Students can receive a free conservation kit that includes a water survey and water saving devices. Results from the program are tracked annually in a comprehensive Program Summary Report which shows the estimated reduction in water usage achieved and the percentage of students who participated in the program. GSWC has been offering other school education programs since September 1992 to raise awareness of water issues including Water Awareness Art Contests, Water Education Grant Program, Water Resource Library, and much more.

GSWC is a United States Environmental Protection Agency (USEPA) WaterSense Partner and sponsors community events including Earth Day, Fix-a-Leak Week, and Water Awareness Months to encourage conservation and water efficiency. GSWC also plans to sponsor community workshops that educate and assist customers on achieving water use efficiency in their landscapes and home through landscape planning, efficient irrigation concepts, and proper turf reduction or removal.

Over the last five years, GSWC has continuously implemented public education and outreach activities.

8.1.5. Programs to Assess and Manage Distribution System Real Losses

GSWC's system is comprised mainly of single and multi-family dwellings. GSWC's water system losses range approximately from 3% to 11% percent, as discussed in **Section 2.1.3**. GSWC has water conservation literature that alerts customers to be on the lookout for irrigation leaks and to correct them promptly. GSWC is available to assist customers in answering questions regarding leaks or higher than expected water usage.

GSWC's Water Loss Control Program is used to prepare the annual water loss audits and monitor water losses. GSWC's Operations Engineering Department reviews the audits to track real and apparent losses.

Losses are monitored by comparing water production to sales. In addition, the Operations Engineer contracts with leak detection companies to perform a survey if necessary. If the annual water loss audit indicates water losses exceed water system goals, a full leak survey will be performed to identify water loss sources and impacts on the overall water system. Leak locations and work orders for repairs are also documented and processed for future water loss control actions. GSWC will continue these programs to assess and manage distribution system real losses.

Over the last five years, GSWC has continuously implemented the activities described here each year.

8.1.6. Water Conservation Program Coordination and Staffing Support

GSWC maintains a fully staffed water conservation department including the Vice President of Environmental Quality, a Water Use Efficiency Manager, and a Senior Water Efficiency Program Specialist. GSWC also utilizes consultants to support program development and implementation on an as-needed basis. GSWC plans to continue to provide water conservation program coordination and staffing support.

8.1.7. Other Demand Management Measures

GSWC implements additional DMM programs using both GSWC-only programs and programs in collaboration with regional partners. Additional information is discussed below and provided in GSWC's *Claremont Customer Service Area Rebates and Programs*, which is available at this link.

GSWC provides an audit program for high-use single-family and multi-family residential customers. These customers are identified through billing data and then contacted to offer free audits. Audits are also offered to walk-in customers at the local customer service area office.

GSWC participates in MWD's regional rebate program, the SoCal WaterSmart Program which is available to the GSWC's residential and commercial customers. There are residential rebates available for the purchase of high-efficiency clothes washing (HECW) machines, premium high-efficiency toilets (PHET), weather-based irrigation controllers (Smart Controllers), rain barrels, rain cisterns, and turf removal to promote water conservation. Some measures, including PHETs, Smart Controllers, and turf removal, are also available to commercial customers. GSWC's commercial customers are additionally offered plumbing, landscaping, HVAC, and medical and dental equipment rebates. GSWC provides information about these programs to customers on its website.

GSWC provides its customers with free high-efficiency conservation kits which include water savings devices and information. Kits include one (1) 1.5 GPM high efficiency showerhead, one (1) 1.5 GPM kitchen aerator, two (2) 1.0 GPM bath aerators, and leak detection tablets with instructions.

GSWC's large landscape program consists of identifying and contacting high-use customers, providing information and offering water use surveys, voluntary landscape water use budgets, and landscape training. The program is available to all large landscape customers free of charge.

Through the Water Savings Incentive Program (WSIP), GSWC customers are provided financial incentives for customized water efficiency projects such as the installation of commercial or industrial high-

efficiency equipment, industrial process improvements, agricultural and landscape water efficiency improvements, and water management services.

These programs have been continuously in effect for the last five years. GSWC plans to continue implementation of the programs described above to promote water conservation.

9. Adoption, Submittal, and Implementation

This section describes GSWC's process for adopting, submitting, and implementing the 2025 RUWMP and WSCP.

9.1. Notice of Public Hearing

A joint notice was provided on behalf of all agencies whose 2025 UWMPs are part of the 2025 RUWMP to all cities and counties and other stakeholders within the region that that 2025 RUWMP is being prepared. This notice was sent at least 60 days prior to GSWC's public hearing. The recipients are identified in **Part 1 Chapter 1** of the 2025 RUWMP and include all cities and counties within GSWC's service area. A second notice was provided to these cities and counties with the date and time of the public hearing and the location where the draft report was available for review.

GSWC provided notice to the public through its website and published announcements of the public hearing in a newspaper on two occasions before the hearing. Copies of the proof of publication are included in **Part 4, Appendix E-2**.

9.2. Public Hearing and Adoption

GSWC held a public hearing on **May 26, 2026** to hear public comments and consider adopting this 2025 RUWMP and GSWC's WSCP. As part of the public hearing, GSWC provided information on their baseline values, water use targets, and implementation plan required in the Water Conservation Act of 2009. The public hearing on the 2025 RUWMP took place before the adoption of the Plan, which allowed GSWC the opportunity to modify the 2025 RUWMP in response to any public input before adoption. After the hearing, the Plan was adopted as prepared or as modified after the hearing.

GSWC'S adoption resolution for the 2025 RUWMP and GSWC's WSCP is included in **Part 4, Appendix E-3.**

9.3. Plan Submittal

GSWC will submit the 2025 RUWMP and the GSWC's WSCP to DWR, the State Library, and cities and counties within 30 days after adoption. The 2025 RUWMP submittal to DWR will be done electronically through DWR's "Water Use Efficiency (WUE) Data Portal" website. The complete set of DWR Submittal Tables for the GSWC Claremont System is included in **Part 4, Appendix E-5**.

9.4. Public Availability

Within 30 days of submitting its Plan to DWR, GSWC will make the 2025 RUWMP and GSWC's WSCP available for public review. Copies will be accessible during normal business hours at the GSWC customer service office and posted on GSWC's website for public viewing.

9.5. Notification to Public Utilities Commission

GSWC will submit the 2025 Plan (and WSCP) to the California Public Utilities Commission as part of its general rate case filings.

9.6. Amending an Adopted UWMP or WSCP

If the adopted 2025 RUWMP or GSWC's WSCP is amended, each of the steps for notification, public hearing, adoption, and submittal will also be followed for the amended plan.

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THREE VALLEYS REGIONAL URBAN WATER MANAGEMENT PLAN

APRIL 2026

2025 Part 3: Regional Supporting Information

PUBLIC REVIEW DRAFT

THREE VALLEYS REGIONAL URBAN WATER MANAGEMENT PLAN

APRIL 2026

2025 Part 3: Regional Supporting Information

Prepared by GEI Consultants, Inc. and Water Systems Consulting, Inc.

A: RUWMP Checklist

Requirement Summary	2025 Regional UWMP Location	Compliance Status
Coordination with local agencies and shared supplies	Part 1 Chapter 1 Section 3	Met
Public participation prior to adoption	Part 1 Chapter 1 Section 1.3.2 Part 3 Appendix B-C	Met
Public hearing and adoption	Part 1 Chapter 1 Section 1.4	Met
Submittal to DWR and State Library	Part 3 Appendix G	Met
Describe service area and regional setting	Part 1 Chapter 1 Section 1	Met
Climate description	Part 1 Chapter 2 Section 1 Part 3 Appendix I	Met
Demographics & population projections	Part 1 Chapter 2 Sections 3	Met
Land use	Part 1 Chapter 2 Section 4	Met
Identify and quantify existing and planned water supplies	Part 1 Chapters 3 and 5	Met
Normal, single-dry, and five-year drought supply	Part 1 Chapter 5	Met
Management of multiple sources	Part 1 Chapter 3	Met
Planned water supply projects	Part 1 Chapter 3 Section 9	Met
Transfers/exchanges	Part 1 Chapter 3 Section 6	Met
Desalination opportunities	Part 1 Chapter 3 Section 8	
Basin descriptions	Part 1 Chapter 3 Section 2	Met
Adjudication / SGMA status	Part 1 Chapter 3 Part 3 Appendix K-P	Met
Historic and projected pumping	Part 1 Chapter 3	Met
Wastewater treatment and recycled water use	Part 1 Chapter 3 Section 5	Met
Planned reuse and feasibility	Part 1 Chapter 3 Section 5.3	Met
Historic and projected water use	Part 1 Chapter 4	Met
SBX7-7 compliance	Part 1 Chapter 4 Section 2.1	Met
UWUO & CWOL framework	Part 1 Chapter 4 Section 2.2	Met

Requirement Summary	2025 Regional UWMP Location	Compliance Status
Demand Management Measures (DMMs)	Part 1 Chapter 4 Section 2.3	Met
20-year WSRA	Part 1 Chapter 5	Met
Lay description of WSRA	Part 1 Chapter 1 Executive Summary	Met
Five-year drought risk analysis	Part 1 Chapter 5 Section 2.3	Met
Lay description of DRA	Part 1 Chapter 1 Executive Summary Part 1 Chapter 5	Met
WSCP summary and consistency	Part 1 Chapter 1	Met

B: 60-Day Notice of Preparation Letters

Agency	60-Day Notice of Preparation Reference
Three Valleys Municipal Water District	Part 4 Appendix A-2 – Attachment 1
City of Glendora	Part 4 Appendix B-2 – Attachment 1
City of La Verne	Part 4 Appendix C-2 – Attachment 1
City of Pomona	Part 4 Appendix D-2 – Attachment 1
Golden State Water Company - Claremont	Part 4 Appendix E-2 – Attachment 1
Golden State Water Company - San Dimas	Part 4 Appendix F-2 – Attachment 1
Rowland Water District	Part 4 Appendix G-2 – Attachment 1
Walnut Valley Water District	Part 4 Appendix H-2 – Attachment 1

C: Notice Distribution Lists

To be included in final document.

D: Proofs of Publication

To be included in final document.

E: Regional Workshops Materials

E – Attachment 1: Regional Workshop #1 Materials

To view the materials for regional workshop #1, use this link.

E – Attachment 2: Regional Workshop #2 Materials

To view the materials for regional workshop #2, use this link.

F: Three Valleys Regional Urban Water Management Plan Adoption Resolution

To be included in final document.

G: Transmittal Letters to State Library and Cities/Counties

To be included in final document.

H: Three Valleys Municipal Water District 2025 Water Resources Master Plan

To view the 2025 Water Resources Master Plan, use this link.

I: 2024 Climate Change Vulnerability Analysis

To be included in final document.

J: Metropolitan Water District Wholesaler Reliability Data

To be included in final document.

K: Main Basin Materials

K – Attachment 1: Main San Gabriel Basin Judgment

To view the Main San Gabriel Basin Judgement, use this link.

K – Attachment 2: Main San Gabriel Basin Five-Year Water Quality and Supply Plan (2023-2028)

To view the Five-Year Water Quality and Supply Plan for 2023-2028, use this link.

K – Attachment 3: Three Valleys Municipal Water District/Metropolitan Water District Main San Gabriel Basin Cyclic Storage Agreement

To be included in final document.

K – Attachment 4: Puente Basin Water Agency Storage and Export Agreement

To be included in final document.

L: Chino Basin Materials

L – Attachment 1: Chino Basin Judgment (1978)

To view the 1978 Chino Basin Judgment, use this link.

L – Attachment 2: Chino Basin Peace Agreement (2000)

To view the 2000 Chino Basin Peace Agreement, use this link.

L – Attachment 3: Three Valleys Municipal Water District One-Time Storage Agreement (Chino Basin)

To be included in final document.

L – Attachment 4: Chino Basin Optimum Basin Management Program

To view the Optimum Basin Management Program, use this link.

M: Six Basins Materials

M – Attachment 1: Six Basins Judgment (1998)

To view the 1998 Six Basins Judgement, use this link.

M – Attachment 2: Three Valleys Municipal Water District Operational Storage Account Agreement (Six Basins)

To be included in final document.

M – Attachment 3: Six Basins Strategic Plan

To view the Six Basins Strategic Plan, use this link.

N: Spadra Basin Materials

N – Attachment 1: Spadra Basin Groundwater Sustainability Agency Memorandum of Agreement

To view the GSA Memorandum of Agreement, use this link

N – Attachment 1: Spadra Basin Groundwater Sustainability Plan

To view the Groundwater Sustainability Plan, use this link.

O: Covina Valley Water Company Pre-1914 Appropriative Water Rights Documentation

To view the Pre-1914 Appropriative Water Rights Documentation, use this link.

P: City of Pomona Pre-1914 Appropriative Water Rights Documentation

To view the Pre-1914 Appropriative Water Rights Documentation, use this link.

Q: SWRCB Wastewater Change Petition Order WW0104

To view Wastewater Change Petition Order WW0104, use this link.

R: SWRCB Wastewater Change Petition Order WW0107

To view Wastewater Change Petition Order WW0107, use this link.

S: Metropolitan Water District Chino Basin Dry-Year Yield Program Agreement

To view Dry-Year Yield Program Agreement, use this link.

T: Central Basin Adjudication

To view Central Basin Adjudication, use this link.

U: Puente Basin Materials

U – Attachment 1: Puente Basin Judgment (1985)

To view 1985 Puente Basin Judgment, use this link.

U – Attachment 2: Puente Narrows Agreement

To view Puente Narrows Agreement, use this link.

THREE VALLEYS REGIONAL URBAN WATER MANAGEMENT PLAN

APRIL 2026

2025 Part 4: Urban Water Management Plan Agency Supporting Information

PUBLIC REVIEW DRAFT

THREE VALLEYS REGIONAL URBAN WATER MANAGEMENT PLAN

APRIL 2026

2025 Part 4: Urban Water Management Plan Agency Supporting Information

THREE VALLEYS MUNICIPAL WATER DISTRICT

GEI Consultants

WSC

Prepared by GEI Consultants, Inc. and Water Systems Consulting, Inc.

E

2025 RUWMP Part 4
GSWC - Claremont
Appendix E

E1: UWMP Compliance Checklist

Retail (x = required)	Order	2025 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	Relevant Submittal Table	2025 UWMP Location
x	1	Chapter 1	10615	A plan shall describe and evaluate sources of supply, reasonable and practical efficient uses, reclamation and demand management activities.	Introduction and overview	n/a	Part 2 Chapter 5 Part 1 Chapter 3
x	1	Chapter 1	10630.5	Each plan shall include a simple description of the Supplier's plan including water availability, future requirements, a strategy for meeting needs, and other pertinent information. Additionally, a Supplier may also choose to include a simple description at the beginning of each chapter.	Plan preparation	n/a	Part 2 Chapter 5 Executive Summary
x	2.1	Section 2.1	10620(b)	Every person that becomes a Supplier shall adopt UWMP within one year after it has become a Supplier.	Plan preparation	n/a	Part 2 Chapter 5
x	2.5	Section 2.5	10644	Supplier shall report the Public Water Systems number, volume of delivered water, and number of connections that are included in this UWMP.	Plan preparation	2-1	Part 2 Chapter 5 Section 2.1
x	2.5	Section 2.5	10644	Supplier shall report if this UWMP is an individual UWMP and whether the Supplier belongs to a regional UWMP or regional alliance.	Plan preparation	2-2	Part 2 Chapter 5
x	2.5	Section 2.5	10644	Supplier shall report whether the data is in fiscal or calendar years and the units of measure used for reporting water volumes.	Plan preparation	2-3	Part 2 Chapter 5
x	2.4	Section 2.4	10642	Provide supporting documentation that the Supplier has encouraged active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of the plan and contingency plan.	Plan preparation	n/a	Part 2 Chapter 5 Section 9 Part 4 Appendix E-2
x	2.4	Section 2.4.2	10620(d)(3)	Coordinate the preparation of its plan with other appropriate agencies in the area, including other Suppliers that share a common source, water management agencies, and relevant public agencies, to the extent practicable.	Plan preparation	n/a	Part 4 Appendix E-2
x	2.4	Section 2.4.1	10631(h)	Retail Suppliers will include documentation that they have provided their Wholesale Supplier(s)—if any—with water use projections from that source.	Plan preparation	2-4 R	Part 1 Chapter 5
n/a	2.4	Section 2.4.1	10631(h)	Wholesale Suppliers will provide their Suppliers with identification and quantification of the existing and planned sources of water available from the Wholesale Supplier to the Supplier during various water year types.	Plan preparation	2-4 W	n/a
x	3	Chapter 3.0	10631(a)	Describe the Supplier service area.	System description	n/a	Part 2 Chapter 5 Section 1.1
x	3.3	Section 3.3	10631(a)	Describe the climate of the Supplier's service area.	System description	n/a	Part 2 Chapter 5 Section 1.1
x	3.4	Section 3.4.1	10631(a)	Provide the current and projected service area populations for 2030, 2035, 2040, 2045 and optionally 2050.	System description	3-1	Part 2 Chapter 5 Section 1.1
x	3.4	Section 3.4.2	10631(a)	Describe other social, economic, and demographic factors affecting the Supplier's water management planning.	System description	n/a	Part 2 Chapter 5 Section 1.1
x	3.5	Section 3.5	10631(a)	Describe the land uses within the service area…include the current and projected land uses within the existing or anticipated service area affecting the Supplier's water management planning. Describe the land uses within the service area.	System description and baselines	n/a	Part 2 Chapter 5 Section 1.1
x	4.2	Sections 4.2.3 and 4.2.4	10631(d)(1)	Quantify past, current, and projected water use, identifying the uses among water use sectors.	System water use	4-1 and 4-2	Part 2 Chapter 5 Section 2
x	4.3	Section 4.3.1	10631(d)(3)(A)	Report the distribution system water loss for each of the five years preceding the plan update.	System water use	4-5	Part 2 Chapter 5 Section 2.1.3
x	4.3	Section 4.3.2	10631(d)(3)(C)	Retail Suppliers shall provide data to show the distribution loss standards were met.	System water use	4-6	Part 2 Chapter 5 Section 2.1.3
x	4.2	Section 4.2.5.4	10631.1(a)	Include projected water use needed for lower income housing projected in the service area of the Supplier.	System water use	4-3	Part 2 Chapter 5 Section 2.3
x	4.2	Section 4.2.5.3	10631(d)(4)(A)	In projected water use, include estimates of water savings from adopted codes, plans, and other policies or laws.	System water use	4-3	Part 2 Chapter 5 Section 2.2

Retail (x = required)	Order	2025 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	Relevant Submittal Table	2025 UWMP Location
x	4.2	Section 4.2.5.3	10631(d)(4)(B)	Provide citations of codes, standards, ordinances, or plans used to make water use projections.	System water use	4-3	Part 2 Chapter 5 Section 2.2
x	4.2	Section 4.2.5.3	10631(d)(4)(B)(ii)	To the extent that a Supplier reports the information described in subparagraph (A), an urban water Supplier shall…Indicate the extent that the water use projections consider savings from codes, standards, ordinances, or transportation and land use plans. Water use projections that do not account for these water savings shall be noted of that fact.	System water use	4-3	Part 2 Chapter 5 Section 2
x	4.2	Section 4.2.5.6	10635(b)	Demands under climate change considerations must be included as part of the drought risk assessment.	System water use	n/a	Part 2 Chapter 5 Section 2.4 Part 1 Chapter 5
n/a	5.1	Section 5.1	10608.36	Wholesale Suppliers shall include an assessment of present and proposed future measures, programs, and policies to help their Retail Suppliers achieve targeted water use reductions.	Baselines and targets	n/a	n/a
x	5.2	Section 5.2	10608.4	Retail Suppliers shall report on their compliance in meeting their water use targets. Reporting requirements will vary depending on whether the Supplier: – Was considered an urban retail water supplier in 2020, – Met its 2020 target in 2020, or – Was part of a merger or consolidation since 2020. Chapter 5 Subsections 5.2.1, 5.2.2, and 5.2.3 address each of these situations.	Baselines and targets	5-1	Part 2 Chapter 5 Section 3
x	6.1	Section 6.1	10631(b)(2)	When multiple sources of water supply are identified, describe the management of each supply in relationship to other identified supplies.	System supplies	n/a	Part 2 Chapter 5 Section 4 Part 1 Chapter 3
x	6.1	Sections 6.1 and 6.2	10631(b)(1)	Provide a discussion of anticipated supply availability under a normal, single dry year, and a drought lasting five years, as well as more frequent and severe periods of drought, including changes in supply due to climate change.	System supplies	n/a	Part 2 Chapter 5 Section 4 Part 2 Chapter 5 Section 5.3 Part 1 Chapter 5 Section 2
x	6.2	Section 6.2.2	10631(b)(4)(C)	Indicate whether groundwater is an existing or planned source of water available to the Supplier. If groundwater is identified as an existing or planned source of water…(include) a detailed description and analysis of the location, amount and sufficiency of groundwater pumped by the Supplier for the past five years.	Water supplies and recycled water	6-1	Part 2 Chapter 5 Section 4.2
x	6.2	Section 6.2.2	10631(b)(4)(A)	Indicate whether a groundwater sustainability plan or groundwater management plan has been adopted by the Supplier or if there is any other specific authorization for groundwater management. Include a copy of the plan or authorization.	System supplies	n/a	Part 2 Chapter 5 Section 4.2 Part 1 Chapter 3
x	6.2	Section 6.2.2	10631(b)(4)(B)	Describe the groundwater basin.	System supplies	n/a	Part 2 Chapter 5 Section 4.2 Part 1 Chapter 3
x	6.2	Section 6.2.2	10631(b)(4)(B)	Indicate if the basin has been adjudicated and include a copy of the court order or decree and a description of the amount of water the Supplier has the legal right to pump.	System supplies	n/a	Part 2 Chapter 5 Section 4.2 Part 1 Chapter 3
x	6.2	Section 6.2.2	10631(b)(4)(B)	For unadjudicated basins…(include) information as to whether DWR has identified the basin as a high- or medium-priority basin in the most current official departmental bulletin…	Water supplies and recycled water	n/a	Part 2 Chapter 5 Section 4.2 Part 1 Chapter 3
x	6.2	Section 6.2.2	10631(b)(4)(B)	For unadjudicated basins…describe efforts by the Supplier to coordinate with sustainability or groundwater agencies to achieve sustainable groundwater conditions.	Water supplies and recycled water	n/a	Part 2 Chapter 5 Section 4.2 Part 1 Chapter 3

Retail (x = required)	Order	2025 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	Relevant Submittal Table	2025 UWMP Location
x	6.2	Section 6.2.2.	10631(b)(4)(C)	If groundwater is identified as an existing or planned source of water... (include) a detailed description and analysis of the location, amount and sufficiency of groundwater pumped by the Supplier for the past five years.	System supplies	n/a	Part 2 Chapter 5 Section 4.2
x	6.2	Section 6.2.2	10631(b)(4)(D)	Provide a detailed description and analysis of the amount and location of groundwater that is projected to be pumped.	System supplies	6-9	Part 2 Chapter 5 Section 4.8
x	6.1	Section 6.1	10631(b)	Identify and quantify the existing and planned sources of water available for 2025, 2030, 2035, 2040, 2045 and optionally 2050.	System supplies	6-8 and 6-9	Part 2 Chapter 5 Section 4.8 Part 1 Chapter 3 Part 1 Chapter 5
x	6.2	Section 6.2.7	10631(c)	Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis.	System supplies	n/a	Part 2 Chapter 5 Section 4.6
x	6.2	Section 6.2.5	10633(a)	Describe the wastewater collection and treatment systems in the Supplier's service area with quantified amount of collection and treatment and the disposal methods.	System supplies (recycled water)	6-2	Part 2 Chapter 5 Section 4.5
x	6.2	Section 6.2.5	10633(b)	Describe the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project.	System supplies (recycled water)	6-3	Part 2 Chapter 5 Section 4.5
x	6.2	Section 6.2.5	10633(c)	Describe the recycled water currently being used in the Supplier's service area.	System supplies (recycled water)	6-4	Part 2 Chapter 5 Section 4.5.1
x	6.2	Section 6.2.5	10633(d)	Describe and quantify the potential uses of recycled water and provide a determination of the technical and economic feasibility of those uses.	System supplies (recycled water)	6-4	Part 2 Chapter 5 Section 4.5 Part 1 Chapter 3 Section 5
x	6.2	Section 6.2.5	10633(e)	Describe the projected use of recycled water within the Supplier's service area at the end of 5, 10, 15, and 20 years, and describe the actual use of recycled water in comparison to uses previously projected.	System supplies (recycled water)	6-4 and 6-5	Part 2 Chapter 5 Section 4.5 Part 1 Chapter 3 Section 5
x	6.2	Section 6.2.5	10633(f)	Describe the actions that may be taken to encourage the use of recycled water and the projected results of these actions in terms of acre-feet of recycled water used per year.	System supplies (recycled water)	6-6	Part 1 Chapter 3 Section 5
x	6.2	Section 6.2.5	10633(g)	Provide a plan for optimizing the use of recycled water in the Supplier's service area.	System supplies (recycled water)	n/a	Part 1 Chapter Section 5
x	6.2	Section 6.2.6	10631(g)	Describe desalinated water project opportunities for long-term supply.	System supplies	6-7	Part 1 Chapter 3 Section 8
x	6.2	Section 6.2.10	10631(f)	Describe the expected future water supply projects and programs that may be undertaken by the water Supplier to address water supply reliability in average, single-dry, and for a period of drought lasting five consecutive water years.	System supplies	6-7	Part 2 Chapter 1 Section 4.7 Part 1 Chapter 3 Section 9
x	6.3	Section 6.3 and Appendix O	10631.2(a)	The UWMP must include energy information, as stated in the code, that a Supplier can readily obtain.	System suppliers, energy intensity	O-1A, O-1B, O-1C, and O-2	Part 2 Chapter 5 Section 4.9 Part 4 Appendix E
x	7.1	Section 7.1	10634	Provide information on the quality of existing sources of water available to the Supplier and the manner in which water quality affects water management strategies and supply reliability.	Water supply reliability assessment	n/a	Part 2 Chapter 5 Section 5 Part 1 Chapter 3
x	7.2	Section 7.2	10635(a)	Service Reliability Assessment: Assess the water supply reliability during normal, dry, and a drought lasting five consecutive water years by comparing the total water supply sources available to the Supplier with the total projected water use over the next 20 years.	Water supply reliability assessment	7-2, 7-3, and 7-4	Part 2 Chapter 5 Section 5.3 Part 1 Chapter 5 Section 2
x	7.2	Section 7.2.3	10620(f)	Describe water management tools and options to maximize resources and minimize the need to import water from other regions.	Water supply reliability assessment	n/a	Part 1 Chapter 3

Retail (x = required)	Order	2025 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	Relevant Submittal Table	2025 UWMP Location
x	7.3	Section 7.3	10635(b)	Provide a drought risk assessment as part of information considered in developing the demand management measures and water supply projects.	Water supply reliability assessment	n/a	Part 2 Chapter 5 Section 2.4 Part 1 Chapter 5
x	7.3	Section 7.3	10635(b)(1)	Include a description of the data, methodology, and basis for one or more supply shortage conditions that are necessary to conduct a drought risk assessment for a drought period that lasts five consecutive years.	Water supply reliability assessment	n/a	Part 2 Chapter 5 Section 6 Part 1 Chapter 5
x	7.3	Section 7.3	10635(b)(2)	Include a determination of the reliability of each source of supply under a variety of water shortage conditions.	Water supply reliability assessment	n/a	Part 2 Chapter 8 Section 6 Part 1 Chapter 5
x	7.3	Section 7.3	10635(b)(3)	Include a comparison of the total water supply sources available to the Supplier with the total projected water use for the drought period.	Water supply reliability assessment	7-5	Part 2 Chapter 5 Section 6 Part 1 Chapter 5
x	7.3	Section 7.3	10635(b)(4)	Include considerations of the historical drought hydrology, plausible changes on projected supplies and demands under climate change conditions, anticipated regulatory changes, and other locally applicable criteria.	Water supply reliability assessment	n/a	Part 2 Chapter 5 Section 5.1 Part 1 Chapter 5
x	8	Chapter 8	10632(a)	Provide a water shortage contingency plan (WSCP) with specified elements below.	Water shortage contingency planning	n/a	Part 4 Appendix E-7
x	8	Chapter 8	10632(a)(1)	Provide an analysis of water supply reliability (from Guidebook Chapter 7) in the WSCP.	Water shortage contingency planning	n/a	Part 4 Appendix E-7
x	8.2	Section 8.2	10632(a)(2)(A)	Provide the written decision-making process and other methods that the Supplier will use each year to determine its water reliability.	Water shortage contingency planning	n/a	Part 4 Appendix E-7
x	8.2	Section 8.2	10632(a)(2)(B)	Provide data and methodology to evaluate the Supplier's water reliability for the current year and one dry year pursuant to factors in the code.	Water shortage contingency planning	n/a	Part 4 Appendix E-7
x	8.3	Section 8.3	10632(a)(3)(A)	Define six standard water shortage levels of 10%, 20%, 30%, 40%, 50% shortage, and greater than 50% shortage. These levels shall be based on supply conditions, including percent reductions in supply, changes in groundwater levels, changes in surface elevation, or other conditions. The shortage levels shall also apply to a catastrophic interruption of supply.	Water shortage contingency planning	n/a	Part 4 Appendix E-7
x	8.3	Section 8.3	10632(a)(3)(B)	Suppliers with an existing WSCP that uses different water shortage levels must cross reference their categories with the six standard categories.	Water shortage contingency planning	8-1	Part 4 Appendix E-7
x	8.4	Section 8.4	10632(a)(4)(A)	Suppliers with WSCPs that align with the defined shortage levels must specify locally appropriate supply augmentation actions.	Water shortage contingency planning	8-2	Part 4 Appendix E-7
x	8.4	Section 8.4	10632(a)(4)(B)	Specify locally appropriate demand reduction actions to adequately respond to shortages.	Water shortage contingency planning	8-3	Part 4 Appendix E-7
x	8.4	Section 8.4	10632(a)(4)(C)	Specify locally appropriate operational changes.	Water shortage contingency planning	8-2	Part 4 Appendix E-7
x	8.4	Section 8.4	10632(a)(4)(D)	Specify additional mandatory prohibitions against specific water use practices that are in addition to State-mandated prohibitions are appropriate to local conditions.	Water shortage contingency planning	Table 8-3	Part 4 Appendix E-7
x	8.4	Section 8.4	10632(a)(4)(E)	Estimate the extent to which the gap between supplies and demand will be reduced by implementation of the action.	Water shortage contingency planning	8-2 and 8-3	Part 4 Appendix E-7
x	8.4	Section 8.4.6	10632.5	The UWMP shall include a seismic risk assessment and mitigation plan.	Water shortage contingency plan	n/a	Part 4 Appendix E-7
x	8.5	Section 8.5	10632(a)(5)(A)	Suppliers must describe that they will inform customers, the public and others regarding any current or predicted water shortages.	Water shortage contingency planning	n/a	Part 4 Appendix E-7
x	8.5	Section 8.5	10632(a)(5)(B), 10632(a)(5)(C)	Suppliers must describe that they will inform customers, the public and others regarding any shortage response actions triggered or anticipated to be triggered and other relevant communications.	Water shortage contingency planning	n/a	Part 4 Appendix E-7
x	8.6	Section 8.6	10632(a)(6)	Retail Supplier must describe how it will ensure compliance with and enforce provisions of the WSCP.	Water shortage contingency planning	n/a	Part 4 Appendix E-7

Retail (x = required)	Order	2025 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	Relevant Submittal Table	2025 UWMP Location
x	8.7	Section 8.7	10632(a)(7)(A)	Describe the legal authority that empowers the Supplier to enforce shortage response actions.	Water shortage contingency planning	n/a	Part 4 Appendix E-7
x	8.7	Section 8.7	10632(a)(7)(B)	Provide a statement that the Supplier will declare a water shortage emergency per Water Code Chapter 3. Water Shortage Emergencies.	Water shortage contingency planning	n/a	Part 4 Appendix E-7
x	8.7	Section 8.7	10632(a)(7)(C)	Provide a statement that the Supplier will coordinate with any city or county within which it provides water for the possible proclamation of a local emergency.	Water shortage contingency planning	n/a	Part 4 Appendix E-7
x	8.8	Section 8.8	10632(a)(8)(A)	Describe the potential revenue reductions and expense increases associated with activated shortage response actions.	Water shortage contingency planning	n/a	Part 4 Appendix E-7
x	8.8	Section 8.8	10632(a)(8)(B)	Provide a description of mitigation actions needed to address revenue reductions and expense increases associated with activated shortage response actions.	Water shortage contingency planning	n/a	Part 4 Appendix E-7
x	8.8	Section 8.8	10632(a)(8)(C)	Retail Suppliers must describe the cost of compliance with Water Code Chapter 3.3, Excessive Residential Water Use During Drought.	Water shortage contingency planning	n/a	Part 4 Appendix E-7
x	8.9	Section 8.9	10632(a)(9)	Retail Suppliers must describe the monitoring and reporting requirements and procedures that ensure appropriate data are collected, tracked, and analyzed for purposes of monitoring customer compliance.	Water shortage contingency planning	n/a	Part 4 Appendix E-7
x	8.10	Section 8.10	10632(a)(10)	Describe reevaluation and improvement procedures for monitoring and evaluation the WSCP to ensure risk tolerance is adequate and appropriate water shortage mitigation strategies are implemented.	Water shortage contingency planning	n/a	Part 4 Appendix E-7
x	8.11	Section 8.11	10632(b)	Analyze and define water features that are artificially supplied with water, including ponds, lakes, waterfalls, and fountains, separately from swimming pools and spas.	Water shortage contingency planning	n/a	Part 4 Appendix E-7
x	8.12	Section 8.12	10632(c)	Make available the WSCP to customers and any city or county where it provides water within 30 days after adoption of the plan.	Water shortage contingency planning	n/a	Part 4 Appendix E-7
x	9.1	Sections 9.1	10631(e)(1)	Retail Suppliers shall provide a description of the nature and extent of each demand management measure implemented over the past five years. The description will address specific measures listed in code.	Demand management measures	n/a	Part 2 Chapter 5 Section 8
n/a	9.2	Sections 9.2	10631(e)(2)	Wholesale Suppliers shall describe specific demand management measures listed in code, their distribution system asset management program, and Supplier assistance program.	Demand management measures	n/a	n/a
x	10	Chapter 10	10608.26(a)	Retail Suppliers shall conduct a public hearing to discuss adoption, implementation, and economic impact of water use targets (recommended to discuss compliance).	Plan adoption, submittal, and implementation	n/a	Part 2 Chapter 5 Section 9
x	10.2	Section 10.2.1	10621(b)	Notify, at least 60 days prior to the public hearing, any city or county within which the Supplier provides water that the Supplier will be reviewing the UWMP and considering amendments or changes to the plan.	Plan adoption, submittal, and implementation	10-1	Part 2 Chapter 5 Section 9 Part 4 Appendix E-2
x	10.4	Section 10.4	10621(f)	Each urban water Supplier shall update and submit its 2025 plan to DWR by July 1, 202 6.	Plan adoption, submittal, and implementation	n/a	Part 2 Chapter 5 Section 9
x	10.2	Sections 10.2.2, 10.3, and 10.5	10642	Provide supporting documentation that the Supplier made the UWMP and WSCP available for public inspection, published notice of the public hearing, and held a public hearing about the UWMP and WSCP.	Plan adoption, submittal, and implementation	n/a	Part 4 Appendix E-3
x	10.2	Section 10.2.2	10642	The Supplier is to provide the time and place of the hearing to any city or county within which the Supplier provides water.	Plan adoption, submittal, and implementation	10-1	Part 4 Appendix E-3
x	10.3	Section 10.3.2	10642	Provide supporting documentation that the UWMP and WSCP has been adopted as prepared or modified.	Plan adoption, submittal, and implementation	n/a	Part 4 Appendix E-3

Retail (x = required)	Order	2025 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	Relevant Submittal Table	2025 UWMP Location
x	10.4	Section 10.4	10644(a)	Provide supporting documentation that the Supplier has submitted their UWMP to the California State Library.	Plan adoption, submittal, and implementation	n/a	Part 2 Chapter 5 Section 9
x	10.4	Section 10.4	10644(a)(1)	Provide supporting documentation that the Supplier has submitted their UWMP to any city or county within which the Supplier provides water no later than 30 days after adoption.	Plan adoption, submittal, and implementation	n/a	Part 2 Chapter 5 Section 9
x	10.4	Sections 10.4.1 and 10.4.2	10644(a)(2)	The UWMP, or amendments to the UWMP, submitted to DWR shall be submitted electronically.	Plan adoption, submittal, and implementation	n/a	Part 2 Chapter 5 Section 9
x	10.7	Section 10.7.2	10644(b)	If revised, submit a copy of the WSCP to DWR within 30 days of adoption.	Plan adoption, submittal, and implementation	n/a	Part 2 Chapter 5 Section 9
x	10.5	Section 10.5	10645(a)	Provide supporting documentation that, not later than 30 days after filing a copy of its UWMP with DWR, the Supplier has or will make the plan available for public review during normal business hours.	Plan adoption, submittal, and implementation	n/a	Part 2 Chapter 5 Section 9
x	10.5	Section 10.5	10645(b)	Provide supporting documentation that, not later than 30 days after filing a copy of its WSCP with DWR, the Supplier has or will make the plan available for public review during normal business hours.	Plan adoption, submittal, and implementation	n/a	Part 2 Chapter 5 Section 9
x	10.6	Section 10.6	10621(c)	If Supplier is regulated by the Public Utilities Commission, include its plan and contingency plan as part of its general rate case filings.	Plan adoption, submittal, and implementation	n/a	Part 2 Chapter 5 Section 9

E2: Public Outreach

E2: Attachment 1 – 60 Day Notices

Document will be provided on request through our contact us webpage.

E2: Attachment 2 – Regional Workshop #1 Materials

Document will be provided on request through our contact us webpage.

E2: Attachment 3 – Regional Workshop #2 Materials

Document will be provided on request through our contact us webpage.

E3: Adoption Resolution

To be included in the final document.

E4: Ordinances and Rules

The following ordinances and rules are available online. Select the links below to view:

- Ordinance No. 2009-10
- Ordinance No. 2010-02
- Rule No. 14.1 Water Conservation and Reduction Plan
- Schedule No. 14.1 Water Shortage Contingency Plan
- Schedule No. 14.1-CM will be provided on request through our contact us webpage.
- Rule No. 20

E5: DWR Tables

Submittal Table 2-1 Retail: Public Water Systems

Public Water System Number	Public Water System Name	Number of Municipal Connections 2025	Volume of Water Supplied 2025 (AF)
CA1910024	GSWC - Claremont	11,540	8,973
	Total	11,540	8,973

Submittal Table 2-2: Plan Identification

Type of Plan	Name of Regional Alliance or RUWMP
Individual UWMP	Three Valleys Regional Urban Water Management Plan

Submittal Table 2-3: Supplier Identification

Type of Supplier	Year Type	Month and date that the year begins (mm/dd)	Units of measure used in UWMP
Supplier is a retail supplier	Calendar Year	01/01	AF

Submittal Table 2-4 Retail: Water Supplier Information Exchange

The retail Supplier has informed the following wholesale supplier(s) of projected water use.
Wholesale Water Supplier Name
Three Valleys Municipal Water District

Submittal Table 3-1 Retail: Population - Current and Projected

Category	2025	2030	2035	2040	2045	2050*(opt)*
Population Served	40,637	41,169	41,702	41,687	41,671	41,656

Submittal Table 4-1 Retail: Total Uses for Potable and Non-Potable Water — Actual

Use Type	Additional Description (as needed)	2025 Actual Water Use Potable or Non-Potable	2025 Actual Water Use Volume (AF)
Single Family		Potable	4,767
Multi-Family		Potable	627
Commercial		Potable	2,430
Landscape		Potable	724
Distribution System Water Loss		Potable	424
		Subtotal Potable	8972
		Subtotal Non-Potable	0
		Total	**8,972**

Submittal Table 4-2 Retail: Total Uses for Potable, and Non-Potable Water — Projected

Use Type	Additional Description	Projected Water Use Potable or Non-Potable (Optional)	Projected Water Use 2030 (AF)	Projected Water Use 2035 (AF)	Projected Water Use 2040 (AF)	Projected Water Use 2045 (AF)	Projected Water Use 2050 opt (AF)
Single Family		Potable	5,302	5,157	4,974	4,802	4,642
Multi-Family		Potable	719	699	674	651	629
Commercial		Potable	2,645	2,572	2,481	2,395	2,315
Landscape		Potable	717	697	672	649	628
Distribution System Water Loss		Potable	491	477	460	444	430
Subtotal Potable			9,874	9,602	9,261	8,941	8,644
Subtotal Non-Potable			0	0	0	0	0
Total			**9,874**	**9,602**	**9,261**	**8,941**	**8,644**

Submittal Table 4-3 Retail: Inclusion in Water Use Projections

Projection Item	Included in Projections?
Are Future Water Savings Included in Projections?	Yes
Are Lower Income Residential Demands Included In Projections?	Yes

Submittal Table 4-5 Retail: Water Loss Audit Reporting

Public Water System ID #	Reporting Period	Submitted to DWR Water Loss Audit Program
CA1910024	2020	Yes
CA1910024	2021	Yes
CA1910024	2022	Yes
CA1910024	2023	Yes
CA1910024	2024	Yes
CA1910024	2025	Yes

Notes: The "Volume of Water Loss" quantities for CY 2020 through CY 2024 were obtained from the annual AWWA Water Loss Audits (and based on the combination of apparent losses and real losses). The AWWA Water Loss Audits were reported on a calendar year basis.

Submittal Table 4-6 Retail: Progress Towards 2028 Water Loss Standard

Public Water System ID # Reported in Submittal Table 2-1 R	Did the Water Board Calculate a Water Loss Standard for this Public Water System?	Real Water Loss State Water Board Standard 2028 Real Water Loss Standard per Unit per day	Real Water Loss State Water Board Standard Units for Real Water Loss	Real Water Loss Most Recent AWWA Water Loss Audit Number of Units (Connections or Miles corresponding with units selected)	Real Water Loss Most Recent AWWA Water Loss Audit Volume of Total Real Loss (AF) (from AWWA Water Loss Audit)	Real Water Loss Per Unit per Day	Apparent Water Loss State Water Board Standard 2028 Apparent Water Loss Standard per Unit per Day	Apparent Water Loss State Water Board Standard Units for Apparent Water Loss	Apparent Water Loss Most Recent AWWA Water Loss Audit Number of Connections	Apparent Water Loss Most Recent AWWA Water Loss Audit Volume of Total Apparent Loss (AF) (from AWWA Water Loss Audit)	Apparent Water Loss Per Unit per Day
CA1910024	Yes	45.6	Gallons per Service Connection per Day (GPSCD)	11,531	276	14.2	4.9	Gallons per Service Connection per Day (GPSCD)	11,531	152	11.8

Water Board's Calculated Water Loss Standards

Submittal Table 5-1 Retail: SB X7-7 2020 Target Progress

Was Supplier part of a merger or consolidation since 2020?	Regional Alliance Target or Individual Target?	2020 Target	Actual 2020 GPCD	Did Supplier Achieve Targeted Reduction for 2020?	Actual 2025 GPCD (From SB X7-7 Compliance Form) *	Did Supplier meet the 2020 Target in 2025? *
n/a	n/a	265	247	Yes	197	Yes

Notes: n/a=Not Applicable

***** Only for suppliers that did not meet the Target in 2020

Submittal Table 6-1 Retail: Groundwater Volume Pumped

Groundwater Type	Potable or Non-Potable (OPTIONAL)	Location or Basin Name	2021 (AF)	2022 (AF)	2023 (AF)	2024 (AF)	2025 (AF)
Alluvial Basin	Potable	Six Basins	4,143	4,150	3,286	2,908	3,389
Alluvial Basin	Potable	Chino Basin	1,073	1,065	921	990	938
		Total	**5,216**	**5,215**	**4,207**	**3,898**	**4,327**

Submittal Table 6-2 Retail: Wastewater Collected Within Service Area

Wastewater Collection Name of Wastewater Collection Agency	Wastewater Collection Wastewater Volume Metered or Estimated? Optional	Wastewater Collection Volume of Wastewater Collected from UWMP Service Area 2025 (AF)	Recipient of Collected Wastewater Name of Wastewater Treatment Plant (WWTP) and Place ID Number	Recipient of Collected Wastewater Is WWTP Located Within UWMP Area?
Sanitation Districts of Los Angeles County	Estimated	2,139	Pomona Water Reclamation Plant, Place ID 250700	No
Sanitation Districts of Los Angeles County	Estimated		A.K. Warren Water Resource Facility, Place ID 234156	No
	Total Wastewater Received from UWMP Service Area in 2025:	**2,139**		

Submittal Table 6-3 Retail: Wastewater Treatment and Outcomes Within UWMP Service Area

Wastewater Treatment Plant Name and Place ID Number	Does This Plant Treat Wastewater Generated Outside the UWMP Service Area? (Optional)	2025 Volume of Wastewater Received from UWMP Service Area (AF)	Total 2025 Volume of Water Treated (AF)	2025 Outcomes of Treated Wastewater Water Recycled Within UWMP Service Area Treatment Level	2025 Outcomes of Treated Wastewater Water Recycled Within UWMP Service Area Volume (AF)	2025 Outcomes of Treated Wastewater Water Recycled Outside of UWMP Service Area Treatment Level	2025 Outcomes of Treated Wastewater Water Recycled Outside of UWMP Service Area Volume (AF)	2025 Outcomes of Treated Wastewater Effluent Discharge that is not a Permitted Recycled Water Use Treatment Level	2025 Outcomes of Treated Wastewater Effluent Discharge that is not a Permitted Recycled Water Use Volume (AF)	2025 Outcomes of Treated Wastewater Required Discharge for Instream Flow Treatment Level	2025 Outcomes of Treated Wastewater Required Discharge for Instream Flow Volume (AF)	2025 Outcomes of Treated Wastewater Delivered to Another Entity for Additional Treatment Treatment Level	2025 Outcomes of Treated Wastewater Delivered to Another Entity for Additional Treatment Volume (AF)	2025 Outcomes of Treated Wastewater Delivered to Another Entity for Additional Treatment Name of other entity
Total		**0**	**0**		**0**		**0**		**0**		**0**		**0**	

Notes: Wastewater was not treated or disposed of within the UWMP service area; therefore, this table was intentionally left blank.

Submittal Table 6-4 Retail: Recycled Water Direct Beneficial Uses Within Service Area

Use Type	Potable or Non-Potable (after treatment if treated) (Optional)	Additional Information	2025 (AF)	2030 (AF)	2035 (AF)	2040 (AF)	2045 (AF)	2050 (AF)	Potential Recycled Water Use Volume	Potential Recycled Water Use Narrative page number (Optional)
		Subtotal Potable	0	0	0	0	0	0	0	
		Subtotal Non-Potable	0	0	0	0	0	0	0	
		Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Notes: Recycled water is currently not used and not planned for use within the service area of the supplier; therefore, this table was intentionally left blank.

Submittal Table 6-5 Retail: 2020 UWMP Recycled Water Use Projection Compared to 2025 Actual

Use Type	2020 Projection for 2025 (AF)	2025 Actual Use (AF)
Total	**0**	**0**

Notes: Recycled water was not used in 2025 nor previously projected for use in 2020; therefore, this table was intentionally left blank.

Submittal Table 6-6 Retail: Methods to Encourage Future Recycled Water Use

Name of Action	Description	Planned Implementation Year	Expected Increase in Recycled Water Use (AF)
		Total (AF)	**0**
		Unit Conversion to AF	**0**

Notes: The Supplier does not plan to expand recycled water use in the future; therefore, this table was intentionally left blank, and a narrative explanation is provided in Section 4.5.1 of the UWMP.

Submittal Table 6-7 Retail: Expected Future Water Supply Projects or Programs

Name of Future Projects or Programs	Joint Project with other suppliers?	If Yes, Supplier Name	Additional Description	Potable or Non-Potable (after treatment if treated) (OPTIONAL)	Planned Implementation Year	Planned for Use in Year Type	Expected Increase in Water Supply to Supplier (AF)

Notes: There are future water supply projects or programs not compatible with this table; therefore, are described in narrative form in Section 4.7 of the UWMP**.**

Submittal Table 6-8 Retail: Water Supplies — Actual

Water Supply	Additional Description	2025 Potable or Non-Potable (after treatment if treated) (Optional)	2025 Actual Volume (AF)	2025 Total Entitlement (AF) (Optional)
Groundwater (not desalinated)	Chino Basin	Potable	938	
Groundwater (not desalinated)	Six Basins	Potable	3,389	
Purchased or Imported Water	City of Upland	Potable	0	
Purchased or Imported Water	Metropolitan Water District - Three Valley Municipal Water District	Potable	4,645	
		Subtotal Potable	8,972	0
		Subtotal Non-Potable	0	0
		Total	**8,972**	**0**

Submittal Table 6-9 Retail: Water Supplies — Projected

Water Supply	Additional Detail on Water Supply	Potable or Non-Potable (after treatment if treated) (OPTIONAL)	Projected Water Supply 2030 Reasonably Available Volume (AF)	Projected Water Supply 2030 Total Entitlement (AF) (Optional)	Projected Water Supply 2035 Reasonably Available Volume (AF)	Projected Water Supply 2035 Total Entitlement (AF) (Optional)	Projected Water Supply 2040 Reasonably Available Volume (AF)	Projected Water Supply 2040 Total Entitlement (AF) (Optional)	Projected Water Supply 2045 Reasonably Available Volume (AF)	Projected Water Supply 2045 Total Entitlement (AF) (Optional)	Projected Water Supply 2050 Reasonably Available Volume (AF)	Projected Water Supply 2050 Total Entitlement (AF) (Optional)
Groundwater (not desalinated)	Chino Basin	Potable	1,003		990		981		973		965	
Groundwater (not desalinated)	Six Basins	Potable	3,590		3,544		3,511		3,483		3,454	
Purchased or Imported Water	Metropolitan Water District - Three Valley Municipal Water District	Potable	5,280		5,069		4,769		4,485		4,224	
Purchased or Imported Water	City of Upland	Potable	0		0		0		0		0	
		Subtotal Potable	9,873	0	9,603	0	9,261	0	8,941	0	8,643	0
		Subtotal Non-Potable	0	0	0	0	0	0	0	0	0	0
		Total	**9,873**	**0**	**9,603**	**0**	**9,261**	**0**	**8,941**	**0**	**8,643**	**0**

Optional Submittal Table 7-1 Retail: Basis of Water Year Data (Reliability Assessment)

Year Type	Base Year	Volume Available (AF)	Percent of Average Supply
Average Year	2021-2025	8,635	100%
Single-Dry Year	2021	10,370	120%
Consecutive Dry Years 1st Year	2018	9,979	116%
Consecutive Dry Years 2nd Year	2019	9,214	107%
Consecutive Dry Years 3rd Year	2020	10,175	118%
Consecutive Dry Years 4th Year	2021	10,370	120%
Consecutive Dry Years 5th Year	2022	9,460	110%

Submittal Table 7-2 Retail: Normal Year Supply and Use Comparison

Total Type	2030 (AF)	2035 (AF)	2040 (AF)	2045 (AF)	2050 (AF)
Supply totals	9,873	9,603	9,262	8,941	8,644
Use totals	9,873	9,603	9,262	8,941	8,644
Difference	**0**	**0**	**0**	**0**	**0**

Submittal Table 7-3 Retail: Single Dry Year Supply and Use Comparison

Total Type	2030 (AF)	2035 (AF)	2040 (AF)	2045 (AF)	2050 (AF)
Supply totals	11,857	11,533	11,123	10,738	10,381
Use totals	11,857	11,533	11,123	10,738	10,381
Difference	**0**	**0**	**0**	**0**	**0**

Submittal Table 7-4 Retail: Multiple Dry Years Supply and Use Comparison

Year	Total Type / Difference	2030 (AF)	2035 (AF)	2040 (AF)	2045 (AF)	2050 (AF)
First year	Supply totals	11,410	11,098	10,704	10,333	9,990
	Use totals	11,410	11,098	10,704	10,333	9,990
	Difference	**0**	**0**	**0**	**0**	**0**
Second year	Supply totals	10,536	10,247	9,884	9,541	9,224
	Use totals	10,536	10,247	9,884	9,541	9,224
	Difference	**0**	**0**	**0**	**0**	**0**
Third year	Supply totals	11,634	11,316	10,914	10,536	10,186
	Use totals	11,634	11,316	10,914	10,536	10,186
	Difference	**0**	**0**	**0**	**0**	**0**
Fourth year	Supply totals	11,857	11,533	11,123	10,738	10,381
	Use totals	11,857	11,533	11,123	10,738	10,381
	Difference	**0**	**0**	**0**	**0**	**0**
Fifth year	Supply totals	10,817	10,521	10,148	9,796	9,471
	Use totals	10,817	10,521	10,148	9,796	9,471
	Difference	**0**	**0**	**0**	**0**	**0**

Submittal Table 7-5 Retail: Five-Year Drought Risk Assessment

Totals	2026	2027	2028	2029	2030
Total Water Use (AF)	11,410	10,536	11,634	11,857	10,817
Total Supplies (AF)	11,410	10,536	11,634	11,857	10,817
Difference w/o WSCP Action (AF)	**0**	**0**	**0**	**0**	**0**

Submittal Table 8-1: Cross-reference for Standard vs Supplier Shortage Levels

Standard Shortage Levels	Percent Shortage Range	Suppliers Shortage Levels	Percent Shortage Range
1	Up to 10%		
2	Up to 20%		
3	Up to 30%		
4	Up to 40%		
5	Up to 50%		
6	>50%		

Notes: The Supplier uses the standard six levels of water shortage; therefore, supplier-specific shortage levels and percentage ranges are not separately identified in this table.

Submittal Table 8-2 Retail: Supply Augmentation and Other Actions

Shortage Level	Supply Augmentation Methods and Other Actions by Water Supplier	How much is this going to reduce the shortage gap? (Percentage)	How much is this going to reduce the shortage gap? Shortage Gap Reduction Value (AF)	Additional Explanation or Reference (Optional)
1	Transfers		Not applicable (see notes)	
2	Transfers		Not applicable (see notes)	
3	Transfers		Not applicable (see notes)	
4	Transfers		Not applicable (see notes)	
5	Transfers		Not applicable (see notes)	
6	Transfers		Not applicable (see notes)	

Notes: GSWC will consider increased production from Six Basins and the Chino Basin using existing facilities to address increased demands. GSWC plans to implement demand reduction measures in the event water supplies from existing sources are not sufficient to meet anticipated demands.

Submittal Table 8-3 Retail: Demand Reduction Actions

Shortage Level	Demand Reduction Actions	How much is this going to reduce the shortage gap? Volume or Percentage	How much is this going to reduce the shortage gap? Shortage Gap Reduction Value (AF)	Additional Explanation or Reference (Optional)	Penalty, Charge, or Other Enforcement?
1	Landscape - Limit landscape irrigation to specific days	Collective reduction from all Shortage Level 1 actions is up to 1,163 AFY	Maximum 2 days a week.	Yes	1
1	Landscape - Limit landscape irrigation to specific times	Collective reduction from all Shortage Level 1 actions is up to 1,163 AFY	Between 7 p.m. and 8 a.m.	Yes	1
2	Other	Collective reduction from Shortage Level 1 plus all Shortage Level 2 actions is up to 2,327 AFY	All actions under Shortage Level 1	Yes	2
2	Implement or Modify Drought Rate Structure or Surcharge	Collective reduction from all Shortage Level 2 actions is up to 2,327 AFY	All use in excess of allocation will be charged regular rate + $2.50/CCF	Yes	2
3	Other	Collective reduction from Shortage Level 2 plus all Shortage Level 3 actions is up to 3,490 AFY	All actions under Shortage Level 2	Yes	3
4	Other	Collective reduction from Shortage Level 3 plus all Shortage Level 4 actions is up to 4,654 AFY	All actions under Shortage Level 3	Yes	4
4	Implement or Modify Drought Rate Structure or Surcharge	Collective reduction from all Shortage Level 4 actions is up to 4,654 AFY	All use in excess of allocation will be charged regular rate + $5.00/CCF	Yes	4

Shortage Level	Demand Reduction Actions	How much is this going to reduce the shortage gap? Volume or Percentage	How much is this going to reduce the shortage gap? Shortage Gap Reduction Value (AF)	Additional Explanation or Reference (Optional)	Penalty, Charge, or Other Enforcement?
5	Other	Collective reduction from Shortage Level 4 plus all Shortage Level 5 actions is up to 5,817 AFY	All actions under Shortage Level 4	Yes	5
6	Other	Collective reduction from Shortage Level 5 plus all Shortage Level 6 actions is greater than 5,817 AFY	All actions under Shortage Level 5	Yes	6
6	Implement or Modify Drought Rate Structure or Surcharge	Collective reduction from Shortage Level 6 actions is greater than 5,817 AFY	All use in excess of allocation will be charged regular rate + $10.00/CCF	Yes	6

Submittal Table 10-1 Retail: Notification to Cities and Counties

City or County Name	60 Day Notice	Notice of Public Hearing
Claremont	Yes	Yes
Montclair	Yes	Yes
Pomona	Yes	Yes
Upland	Yes	Yes
Los Angeles County	Yes	Yes

E6: AWWA Water Audits

The following AWWA Water Audit reports are available online. Select the links below to view each report:

- 2020 AWWA Water Audit
- 2021 AWWA Water Audit
- 2022 AWWA Water Audit
- 2023 AWWA Water Audit
- 2024 AWWA Water Audit

If a link is not available, AWWA Water Audit reports for all years can be downloaded from the WUEdata website.

E7: Water Shortage Contingency Plan

2025 WATER SHORTAGE CONTINGENCY PLAN

GOLDEN STATE WATER COMPANY - CLAREMONT

ACRONYMS AND ABBREVIATIONS

Acronym	Definition
AF	Acre-Foot
AFY	Acre-Feet per Year
CCF	Hundred Cubic Feet
CPUC	California Public Utilities Commission
CWC	California Water Code
DWA	Division of Water and Audits
DWR	California Department of Water Resources
ERP	Emergency Response Plan
FEMA	Federal Emergency Management Agency
FY	Fiscal Year
GSWC	Golden State Water Company
MWD	Metropolitan Water District of Southern California
RRA	Risk and Resilience Assessment
TVMWD	Three Valleys Municipal Water District
USEPA	United States Environmental Protection Agency
UWMP	Urban Water Management Plan
WSAP	Water Supply Allocation Plan
WSCP	Water Shortage Contingency Plan

WATER SHORTAGE CONTINGENCY PLAN

WATER SHORTAGE CONTINGENCY PLAN

Golden State Water Company – Claremont's (GSWC) 2025 Water Shortage Contingency Plan (WSCP) discusses and provides the following:

- GSWC's WSCP is a detailed approach which presents how GSWC intends to act, or respond, in the case of an actual water shortage.
- Preparation of GSWC's "Annual Water Supply and Demand Assessment" (Annual Assessment) is discussed. Beginning July 1, 2022, GSWC has submitted the Annual Assessment each year through 2025. The Annual Assessment includes a review of GSWC's "unconstrained" water demands for the current year and for a potential upcoming single dry year. Unconstrained water demands represent GSWC's water demands prior to any "response actions" GSWC may invoke pursuant to GSWC's WSCP.
- GSWC will manage water supplies to minimize the adverse impacts of water shortages. GSWC's plan for water usage during periods of shortage is designed to address six standard progressive water shortage levels including up to a 10, 20, 30, 40, and 50 percent shortage, and a greater than a 50 percent shortage.
- For each declared water supply shortage level, customers will be required to reduce their consumption by the percentage specified in the corresponding water supply shortage level.
- For each declared water supply shortage level, GSWC has established response actions to reduce demand on water supplies and to reduce any shortage gaps in water supplies. These demand reduction actions include irrigation and other outdoor use restrictions, rate structure changes, and other water use prohibitions.
- The operational changes GSWC will consider in addressing water shortages on a short-term basis are discussed and include improved monitoring, analysis, and

tracking of customer water usage to enforce demand reduction measures.

- GSWC's Emergency Response Plan (ERP) is summarized. The ERP provides the management, procedures, and designated actions GSWC and its employees will implement during emergency situations (including catastrophic water shortages) resulting from natural disasters, system failures, and other unforeseen circumstances.
- The preparation of GSWC's seismic risk assessment and mitigation plan is discussed. The locations of earthquake faults in the vicinity of GSWC's water service area are provided.
- The effectiveness of the shortage response actions for each of GSWC's standard water shortage levels is presented. GSWC has been able to provide sufficient water supplies to its customers, including during long-term droughts and years with historically high water demands.
- The communication protocols implemented by GSWC when it declares any water shortage level are presented.
- The compliance and enforcement procedures associated with GSWC's standard water shortage levels are presented.
- The legal authorities associated with GSWC's standard water shortage levels are presented.
- The financial consequences associated with GSWC's standard water shortage levels are presented.
- GSWC will evaluate the need for revising the WSCP to resolve any water shortage gaps, as necessary. The steps necessary for GSWC to adopt and amend its WSCP are presented.

The following WSCP includes references to Chapters and Sections from Golden State Water Company – Claremont's 2025 Urban Water Management Plan:

1 WATER SUPPLY RELIABILITY ANALYSIS

CWC 10632.

(a)(1) The analysis of water supply reliability conducted pursuant to Section 10635.

GSWC's sources of supply were discussed in Chapter 4 of the 2025 UWMP and consist of groundwater from Six Basins, groundwater from Chino Basin, and treated imported water purchased from Metropolitan Water District of Southern California (MWD) through Three Valleys Municipal Water District (TVMWD) and treated purchased water from City of Upland. Both Six Basins and Chino Basin are adjudicated, and groundwater supplies are managed. The reliability of the various sources of supply are discussed in Chapter 5 of the 2025 UWMP. Based on the adjudication provisions in the two groundwater basins, GSWC is able to produce groundwater without limitation, provided an applicable assessment is paid to the respective Watermaster service to purchase untreated imported water for groundwater replenishment. Imported water supplies (both treated and untreated) may be impacted in the event MWD implements its Water Supply Allocation Plan (WSAP) due to a water supply shortage.

2 ANNUAL WATER SUPPLY AND DEMAND ASSESSMENT PROCEDURES

CWC 10632.

(a)(2) The procedures used in conducting an annual water supply and demand assessment that include, at a minimum, both of the following:

(A) The written decision-making process that an urban water supplier will use each year to determine its water supply reliability.

(B) The key data inputs and assessment methodology used to evaluate the urban water supplier's water supply reliability for the current year and one dry year, including all of the following:

(i) Current year unconstrained demand, considering weather, growth, and other influencing factors, such as policies to manage current supplies to meet demand objectives in future years, as applicable.

(ii) Current year available supply, considering hydrological and regulatory conditions in the current year and one dry year. The annual supply and demand assessment may consider more than one dry year solely at the discretion of the urban water supplier.

(iii) Existing infrastructure capabilities and plausible constraints.

(iv) A defined set of locally applicable evaluation criteria that are consistently relied upon for each annual water supply and demand assessment.

(v) A description and quantification of each source of water supply.

CWC 10632.1.

An urban water supplier shall conduct an annual water supply and demand assessment pursuant to subdivision (a) of Section 10632 and, on or before July 1 of each year, submit an annual water shortage assessment report to the department with information for anticipated shortage, triggered shortage response actions, compliance and enforcement actions, and communication actions consistent with the supplier's water shortage contingency plan. An urban water supplier that relies on imported water from the State Water Project or the Bureau of Reclamation shall submit its annual water supply and demand assessment within 14 days of receiving its final allocations, or by July 1 of each year, whichever is later.

Beginning July 1, 2022, GSWC has submitted an Annual Assessment in accordance with California Department of Water Resources' (DWR) guidance and requirements. The Annual Assessment includes a review of GSWC's unconstrained water demands

(i.e., water demands prior to any projected response actions GSWC may trigger under this WSCP) for the current year and the upcoming (potential single dry) year. GSWC also includes information regarding anticipated shortages, triggered shortage response actions, compliance and enforcement actions, and communication actions consistent with the GSWC's WSCP.

For each Annual Assessment, GSWC prepares a preliminary assessment which evaluates the adequacy of its water supplies for the current and upcoming years by April of each year. The preliminary assessment includes a review of water supplies for at least a single dry year.

The components of an Annual Assessment consist of the following:

- A written decision-making process
- Key data inputs and assessment methodology

2.1 DECISION MAKING PROCESS

GSWC produces groundwater from Six Basins and Chino Basin as its primary sources of water supply and these basins are managed on a fiscal year basis. Consequently, during the third quarter of each fiscal year, GSWC reviews its water demands from the initial six months along with the current groundwater basin conditions and local hydrology. This information is used to help develop the Annual Assessment. A draft of the Annual Assessment is circulated internally within GSWC for peer review and comment. Based on comments received, a redraft is prepared and provided to GSWC managers during the spring of each year. The draft is then provided to the General Manager for final review. Subsequently, a final draft of the Annual Assessment is provided to the GSWC's Board of Directors for review and included in the agenda as part of a Board meeting such that it can be approved and any recommended specific shortage response actions may be enacted. The final Annual Assessment is provided to DWR no later than July 1 of each year.

The Annual Assessments are instrumental in providing guidance to GSWC for decisions regarding potential declarations of a water supply shortage and implementation of water reduction stages, instituting mandatory water restrictions, promoting water use efficiency and conservation programs, water rates and drought rate surcharges, and the necessity of pursuing alternative water supplies. This process ensures adequate water supplies resources are available to GSWC.

2.2 DATA AND METHODOLOGIES

The key data inputs and methodologies which evaluated by GSWC during the preparation of the preliminary assessment include the following:

1) Evaluation Criteria: The locally applicable evaluation criteria used to prepare the Annual Assessment are identified. The evaluation criteria includes, but is not limited to, an analysis of current local hydrology (including rainfall and groundwater levels), current water demands, a review of water system improvement plans which may impact infrastructure availability, and water quality regulations which may impact groundwater availability. GSWC compares total demand to total supply to identify potential shortages. If shortages are identified, GSWC will determine the necessary WSCP level and corresponding reduction.

2) Water Supply: A description and available volume of each available water supply source is provided. The descriptions includes a quantification of each available water supply source and is based on review of current production capacities, historical production, UWMPs, and prior water supply studies (including Water Supply Assessments and/or Master Plans).

3) Unconstrained Water Demand: The potential unconstrained water demands during the current year and the upcoming (potential single dry) year, prior to any special shortage response actions, are reviewed and calculated as necessary. The review includes factors such as weather, existing and projected land uses and populations, actual customer consumption and water use factors, monthly Urban

Water Supplier Reports, existing water shortage levels (see Section 3), and existing water conservation ordinances (see Section 8.1.1 of the UWMP).

4) Planned Water Use for Current Year Considering Dry Subsequent Year: The water supplies available to meet the demands during the current year and the upcoming (potential single dry) year are considered and identified for each source of supply. The evaluation includes factors such as estimated water demands, weather, groundwater basin operating safe yields, water quality results, existing available pumping capacities, imported water allocations, contractual obligations, regulatory issues, use of emergency interconnections, and the costs associated with producing each water supply source.

5) Infrastructure Considerations: The capabilities of the water distribution system infrastructure to meet the water demands during the current year and the upcoming (potential single dry) year are considered. Available production capacities (e.g., groundwater well capacities) and distribution system water losses (see Section 2.1.2 of the UWMP) are reviewed. In addition, capital improvement and replacement projects, as well as potential projects which may increase water system and production capacities (see Section 4.7 of the UWMP), are considered.

6) Other Factors: Additional local considerations, if any, which can affect the availability of water supplies are described.

3 SIX STANDARD WATER SHORTAGE LEVELS

CWC 10632.

(a)(3)(A) Six standard water shortage levels corresponding to progressive ranges of up to 10, 20, 30, 40, and 50 percent shortages and greater than 50 percent shortage. Urban water suppliers shall define these shortage levels based on the suppliers' water supply conditions, including percentage reductions in water supply, changes in groundwater levels, changes in surface elevation or level of subsidence, or other changes in hydrological or other local conditions indicative of the water supply available for use. Shortage levels shall also apply to catastrophic interruption of water supplies, including, but not limited to, a regional power outage, an earthquake, and other potential emergency events.

(a)(3)(B) An urban water supplier with an existing water shortage contingency plan that uses different water shortage levels may comply with the requirement in subparagraph

(A) by developing and including a cross reference relating its existing categories to the six standard water shortage levels.

GSWC will manage water supplies prudently to minimize the adverse impacts of water shortages. GSWC's plan for water usage during periods of shortage is designed to incorporate six standard water shortage levels corresponding to progressive ranges from up to a 10, 20, 30, 40, and 50 percent shortage, and greater than a 50 percent shortage.

For each declared water supply shortage level, customers will be required to reduce their consumption by the percentage specified in the corresponding water supply shortage level. GSWC will identify the year to be used for establishing the customer baseline water use.

California Public Utilities Commission's (CPUC) Rule No. 14.1 ("Water Conservation and Rationing Plan"), adopted on November 3, 2022, and Schedule No. 14.1 ("Water Shortage Contingency Plan With Staged Mandatory Reductions And Drought Surcharges"), adopted on March 1, 2025 established six (6) water shortage levels. A copy of Rule 14.1 and Schedule 14.1 is provided in Appendix A. In accordance with the CWC in which urban water suppliers are required to define six standard water shortage levels, GSWC updated its Schedule No. 14.1 to reflect the mandated shortage levels.

GSWC's 2025 Mandated Shortage Levels

2025 Standard Level	Shortage Level
1	< 10%
2	10 to 20%
3	20 to 30%
4	30 to 40%
5	20 to 50%
6	>50 %

Note: The 2020 shortage levels have remained the same for 2025.

Table 1 provides a description of the six water shortage levels, which may be triggered by a shortage in one or more of GSWC's water supply sources, depending on the severity of the shortage and its anticipated duration.

Table 1. Water Shortage Contingency Planning Levels

Submittal Table 8-1: Water Shortage Contingency Plan Levels		
Shortage Level	**Percent Shortage Range**	**Shortage Response Actions (*Narrative description*)**
1	Up to 10%	"Water Alert" – Voluntary conservation is encouraged. GSWC Implements voluntary conservation measures authorized under Rule No. 14.1. Establishes a voluntary demand reduction target for each water system. GSWC informs public of water shortage conditions or demand reduction targets, GSWC identifies the year to be used for establishing the customer baseline water use. Recommend voluntary 3-Day outdoor irrigation between the hours of 7 PM and 8 AM per specified schedule. GSWC may change the number of watering days and the specific days of watering after notification in accordance with CPUC Rule 14.1.
2	Up to 20%	20% Mandatory Reduction Stage – "Moderate Shortage" - In addition to all actions in Shortage Level 1, Outdoor irrigation is restricted to two (2) days per week per established schedule. GSWC calculates customer conservation allocation based upon the year identified in Stage 1, less 20%. For residential customers no allocation will be less than 8 CCF/monthly billing period or 16 CCF/bi-monthly billing period unless directed otherwise by an authorized government agency. Water usage in excess of customer baseline may be charged regular rate plus drought emergency surcharge of up to $2.50 per CCF Installation of a flow restrictor for repeated violation of water use restrictions under Rule No, 14.1, C.3, as noted in Section C. of Schedule No. 14.1.
3	Up to 30%	30% Mandatory Reduction Stage – "Severe Shortage" - In addition to actions in Shortage Level 2, GSWC calculates customer conservation allocation based upon year identified in Stage 1, less 30%. For residential customers no allocation will be less than 8 CCF/monthly billing period or 16 CCF/bi-monthly billing period unless directed otherwise by an authorized government agency. Water usage in excess of customer baseline may be charged regular rate plus drought emergency surcharge of up to $5.00 per CCF. Installation of a flow restrictor for repeated violation of water use restrictions under Rule No, 14.1, C.3, as noted in Section C. of Schedule No. 14.1.
4	Up to 40%	40% Mandatory Reduction Stage – "Critical Shortage" - In addition to actions in Shortage Level 3, GSWC calculates customer conservation allocation based upon year identified in Stage 1, less 40%. For residential customers no allocation will be less than 8 CCF/monthly billing period or 16 CCF/bi-monthly billing period unless directed otherwise by an authorized government agency. Water usage in excess of customer baseline may be charged regular rate plus drought emergency surcharge of up to $7.50 per CCF. Installation of a flow restrictor for repeated violation of water use restrictions under Rule No, 14.1, C.3, as noted in Section C. of Schedule No. 14.1.
5	Up to 50%	50% Mandatory Reduction Stage – "Shortage Crisis" - In addition to actions in Shortage Level 4, GSWC calculates customer conservation allocation based upon year identified in Stage 1, less 50%. For residential customers no allocation will be less than 8 CCF/monthly billing period or 16 CCF/bi-monthly billing period unless directed otherwise by an authorized government agency. Water usage in excess of customer baseline may be charged regular rate plus drought emergency surcharge of up to $10.00 per CCF. Installation of a flow restrictor for repeated violation of water use restrictions under Rule No, 14.1, C.3, as noted in Section C. of Schedule No. 14.1.

Submittal Table 8-1: Water Shortage Contingency Plan Levels		
Shortage Level	**Percent Shortage Range**	**Shortage Response Actions (*Narrative description)***
6	>50%	55% Mandatory Reduction Stage – "Emergency Shortage" - In addition to actions in Shortage Level 5, GSWC calculates customer conservation allocation based upon year identified in Stage 1, less 55%. For residential customers no allocation will be less than 8 CCF/monthly billing period or 16 CCF/bi-monthly billing period unless directed otherwise by an authorized government agency. Water usage in excess of customer baseline may be charged regular rate plus drought emergency surcharge of up to $15.00 per CCF. Installation of a flow restrictor for repeated violation of water use restrictions under Rule No, 14.1, C.3, as noted in Section C. of Schedule No. 14.1.

NOTES: Flow Restrictor Charges – The charge for installation and removal of a flow-restricting device shall be:
5/8" to 1" - $150
1-1/2" to 2" $200
3" and larger - $300

4 SHORTAGE RESPONSE ACTIONS

CWC 10632.

(a)(4) Shortage response actions that align with the defined shortage levels and include, at a minimum, all of the following:

(A) Locally appropriate supply augmentation actions.

(B) Locally appropriate demand reduction actions to adequately respond to shortages.

(C) Locally appropriate operational changes.

(D) Additional, mandatory prohibitions against specific water use practices that are in addition to state-mandated prohibitions and appropriate to the local conditions.

(E) For each action, an estimate of the extent to which the gap between supplies and demand will be reduced by implementation of the action.

Shortage response actions are dependent on the severity of a declared shortage level. Response actions implement varying improvements and regulations of system infrastructure and operations, water supply augmentation, demand reduction initiatives and other water use functions to conserve water supplies.

GSWC is an investor-owned supplier and is subject to CPUC approval to establish and activate necessary shortage response actions and corresponding water shortage levels pursuant to CPUC Rule 14.1 (“Water Conservation and Rationing Plan”). GSWC may express a need for customers to practice voluntary or mandatory conservation measures. If GSWC finds it necessary, GSWC may request to activate a water shortage level which would implement fines and surcharges in addition to mandatory conservation measures after establishing a CPUC Schedule No. 14.1 (“Water Shortage Contingency Plan With Staged Mandatory Restrictions, Reductions And Drought Surcharges”). Copies of these CPUC documents are in Appendix A.

4.1 DEMAND REDUCTION

GSWC may establish water shortage response actions to reduce demand on water supplies. These demand reduction actions include irrigation and other outdoor use restrictions, rate structure changes, and other water use prohibitions. Depending on the percent reduction in GSWC's water supply and corresponding water shortage level, regulations are made to conserve water and reduce the shortage gap in normal supply levels. Many demand reduction actions, identified as voluntary or mandatory conservation measures, are applicable to all levels of water shortages. The structure of water shortage levels are designed to encourage customers with high gallon per capita usage to achieve proportionally greater reduction than those with low usage. Violations of these demand reduction actions may be considered waste and an unreasonable use of water. Table 2 describes each demand reduction action and its effect on reducing the shortage gap.

The following demand reduction actions may be activated under voluntary or mandatory conservation measures and are applicable and in effect at all times during any activated water shortage level:

a. The application of potable water to outdoor landscapes in a manner that causes runoff onto adjacent property, non-irrigated areas, private and public walkways, roadways, parking lots, or structures.

b. The use of a hose that dispenses potable water to wash a motor vehicle, except where the hose is fitted with a shut-off nozzle or device attached to it that causes it to cease dispensing water immediately when not in use.

c. The use of potable water for washing buildings, structures, sidewalks, walkways, patios, tennis courts, or other hard-surfaced, non-porous areas.

d. The use of potable water in a fountain or other decorative water feature, except where the water is part of a recirculating system.

e. The use of potable water for watering outside plants, lawn, landscape, and turf

area during certain hours prohibited by applicable laws or rules, during and up to 48 hours after measurable rainfall (0.1” or more).

f. GSWC will promptly notify customers when aware of leaks within the customer’s control; the failure to repair any leaks, breaks, or other malfunction resulting in water waste in a customer’s domestic or outdoor water system within forty-eight (48) hours of notification by the utility, unless other, specific arrangements are made with and agreed to by the utility.

g. The serving of water, other than upon request, in eating and drinking establishments, including but not limited to restaurants, hotels, cafes, bars, or other public places where food or drink are served and/or purchased.

h. Hotels/motels must provide guests with the option of choosing not to have towels and linens laundered daily and prominently display notice of this option.

i. The use of potable water for irrigation of ornamental turf on public street medians.

j. The use of potable water for irrigation outside of newly constructed homes and buildings that is not delivered by drip or micro spray systems.

k. Commercial, industrial, and institutional properties, such as campuses, golf courses, and cemeteries, shall immediately implement water efficiency measures to reduce potable water use in an amount consistent with the mandated reduction.

l. Further reduction in or the complete prohibition of any other use of water declared non-essential, unauthorized, prohibited, or unlawful by an authorized government or regulatory agency or official.

m. Use of potable water for watering streets with trucks, or other vehicles, except for initial wash-down for construction purposes (if street sweeping is not feasible), or to protect the health and safety of the public.

n. The outdoor irrigation restriction does not apply to trees or edible vegetation

watered solely by drip or micro spray systems.

o. The use of potable water is prohibited for the irrigation of non-functional turf at commercial, industrial and institutional sites.

- Use of potable water for more than minimal landscaping, as defined in the landscaping regulation of the jurisdiction or as described in Article 10.8 of the California Government Code in connection with new construction.
- Excessive use of water when a utility has notified the customer in writing to repair a broken or defective plumbing, sprinkler, watering, or irrigation system and the customer has failed to make such repairs within five (5) business days.
- Use of potable water which results in flooding or runoff in gutters or streets.
- Individual private washing of cars with a hose except with the use of a positive action shut-off nozzle. Use of potable water for washing commercial aircraft, cars, buses, boats, trailers, or other commercial vehicles at any time, except at commercial or fleet vehicle or boat washing facilities operated at a fixed location where equipment using water is properly maintained to avoid wasteful use.
- Use of potable water to wash buildings, structures, driveways, patios, parking lots, tennis courts, or other hard-surfaced areas, except in the cases where health and safety are at risk.
- Use of potable water to irrigate turf lawns, gardens, or ornamental landscaping by means other than drip irrigation, or hand watering without quick acting positive action shut-off nozzles, on a specific schedule, for example: 1) between 7 p.m. and 8 a.m.; 2) every other day; or 3) selected days of the week.
- Use of potable water for street cleaning with trucks, except for initial wash-down for construction purposes (if street sweeping is not feasible), or to protect the health and safety of the public.
- Use of potable water for construction purposes, such as consolidation of backfill, dust control, or other uses unless no other source of water or other method can be used.

- Use of potable water for construction purposes unless no other source of water or method can be used.
- Use of potable water for street cleaning.
- Operation of commercial car washes must ensure that at least 50 percent of the potable water used per cycle is recycled.
- Use of potable water for watering outside plants, lawn, landscape, and turf areas during certain hours if and when specified in Schedule 14.1.
- Use of potable water for decorative fountains or the filling or topping off of decorative lakes or ponds which utilize recycled water.
- Serving water in any restaurant except upon the request of a patron.
- Use of potable water to flush hydrants, except where required for public health or safety.

Stage 1 – Voluntary Conservation "Water Alert":

Recommended voluntary outdoor irrigation – Three (3) days per week:

Addresses Ending In:	Watering Days
Even Numbers (0, 2, 4, 6, 8)	Sunday, Wednesday, Friday
Odd Numbers (1, 3, 5, 7, 9)	Tuesday, Thursday, Saturday

Additional actions:

- GSWC will establish a voluntary demand reduction target for each water system.
- All outdoor irrigation must occur between the hours of 7 p.m. and 8 a.m.
- If a city, county, or other public agency adopts restrictions on the number of days or hours of the day that customers may irrigate, GSWC, at its discretion, may adopt and enforce those restrictions.

If conditions warrant, GSWC will change the number of watering days and the specific days of watering after first notifying its customers in accordance with Rule 14.1.

Stage 2 – 20% Mandatory Reduction Stage "Moderate Shortage"

In addition to the restrictions identified in Stage 1 Voluntary Conservation "Water Alert", the following allocations and drought emergency surcharges are in effect:

- Outdoor Irrigation is restricted to two (2) days per week based on the irrigation schedule set in Schedule 14.1.
- GSWC calculates customer conservation allocation based upon the year identified in Stage 1 less 20%
- For residential customers, no allocation will be set less than eight hundred cubic feet (8 CCF) per monthly billing period or sixteen (16) CCF per bi-monthly billing period.
- All usage in excess of the customer's allocation will be charged at the regular rate plus a drought emergency surcharge of $2.50 per CCF.

Stage 3 – 30% Mandatory Reduction Stage "Severe Shortage":

In addition to the restrictions identified in Stage 2 – 20% Mandatory Reduction Stage "Moderate Shortage", the following allocations and drought emergency surcharges are in effect:

- GSWC calculates customer conservation allocation based upon the year identified in Stage 1 less 30%
- For residential customers no allocation will be set less than eight (8) Ccf per monthly billing period or 16 Ccf per bi-monthly billing period, unless directed otherwise by an authorized government agency.
- All usage in excess of the customer's allocation will be charged at the regular rate plus a drought emergency surcharge of $5.00 per CCF

Installation of a flow restrictor for repeated violation of water use restrictions under Rule 14.1 C.3., as noted in Section C of Schedule 14.1.Stage 4 – 40% Mandatory Reduction Stage "Critical Shortage"

In addition to the restrictions identified in Stage 3 - 30% Mandatory Reduction Stage "Severe Shortage", the following allocations and drought emergency surcharges are in effect:

- GSWC calculates customer conservation allocation based upon the year identified in Stage 1 less 40%
- For residential customers no allocation will be set less than eight (8) Ccf per monthly billing period or 16 Ccf per bi-monthly billing period, unless directed otherwise by an authorized government agency.
- No allocation will be set less than eight (8) CCF per monthly billing period or sixteen (16) CCF per bi-monthly billing period
- All usage in excess of the customer's allocation will be charged at the regular rate plus a drought emergency surcharge of $7.50 per CCF.

Installation of a flow restrictor for repeated violation of water use restrictions under Rule 14.1 C.3., as noted in Section C of Schedule 14.1.Stage 5 – 50% Mandatory Reduction

Stage “Shortage Crisis”

In addition to the restrictions identified in Stage 4 – 40% Mandatory Reduction Stage “Critical Shortage”, the following allocations and drought emergency surcharges are in effect:

- GSWC calculates customer conservation allocation based upon the year identified in Stage 1 less 50%
- For residential customers no allocation will be set less than eight (8) Ccf per monthly billing period or 16 Ccf per bi-monthly billing period, unless directed otherwise by an authorized government agency.
- No allocation will be set less than eight (8) CCF per monthly billing period or sixteen (16) CCF per bi-monthly billing period.
- All usage in excess of the customer’s allocation will be charged at the regular rate plus a drought emergency surcharge of $10.00 per CCF

Installation of a flow restrictor for repeated violation of water use restrictions under Rule 14.1 C.3., as noted in Section C of Schedule 14.1.Stage 6 – 55% Mandatory Reduction Stage “Emergency Shortage”:

In addition to the restrictions identified in Stage 5 – 50% Mandatory Reduction Stage “Shortage Crisis”, the following allocations and drought emergency surcharges are in effect:

- GSWC calculates customer conservation allocation based upon the year identified in Stage 1 less 55%
- For residential customers no allocation will be set less than eight (8) Ccf per monthly billing period or 16 Ccf per bi-monthly billing period, unless directed otherwise by an authorized government agency.
- No allocation will be set less than eight (8) CCF per monthly billing period or sixteen (16) CCF per bi-monthly billing period
- All usage in excess of the customer’s allocation will be charged at the regular rate

plus a drought emergency surcharge of $15.00 per CCF.

- Installation of a flow restrictor for repeated violation of water use restrictions under Rule 14.1 C.3., as noted in Section C of Schedule 14.1.

Table 2. Demand Reduction Actions

Submittal Table 8-3: Demand Reduction Actions				
Shortage Level	Demand Reduction Actions ***Drop down list*** *These are the only categories that will be accepted by the WUEdata online submittal tool. Select those that apply.*	How much is this going to reduce the shortage gap? *Include units used (volume type or percentage)*	Additional Explanation or Reference *(optional)*	Penalty, Charge, or Other Enforcement? ***For Retail Suppliers Only*** *Drop Down List*
1	Landscape - Limit landscape irrigation to specific days	Collective reduction from all Shortage Level 1 actions is up to 1,163 AFY	Maximum 2 days a week.	Yes
1	Landscape - Limit landscape irrigation to specific times	Collective reduction from all Shortage Level 1 actions is up to 1,163 AFY	Between 7 p.m. and 8 a.m.	Yes
2	Other	Collective reduction from Shortage Level 1 plus all Shortage Level 2 actions is up to 2,327 AFY	All actions under Shortage Level 1	Yes
2	Implement or Modify Drought Rate Structure or Surcharge	Collective reduction from all Shortage Level 2 actions is up to 2,327 AFY	All use in excess of allocation will be charged regular rate + $2.50/CCF	Yes
3	Other	Collective reduction from Shortage Level 2 plus all Shortage Level 3 actions is up to 3,490 AFY	All actions under Shortage Level 2	Yes
4	Other	Collective reduction from Shortage Level 3 plus all Shortage Level 4 actions is up to 4,654 AFY	All actions under Shortage Level 3	Yes
4	Implement or Modify Drought Rate Structure or Surcharge	Collective reduction from all Shortage Level 4 actions is up to 4,654 AFY	All use in excess of allocation will be charged regular rate + $5.00/CCF	Yes
5	Other	Collective reduction from Shortage Level 4 plus all Shortage Level 5 actions is up to 5,817 AFY	All actions under Shortage Level 4	Yes
6	Other	Collective reduction from Shortage Level 5 plus all Shortage Level 6 actions is greater than 5,817 AFY	All actions under Shortage Level 5	Yes
6	Implement or Modify Drought Rate Structure or Surcharge	Collective reduction from Shortage Level 6 actions is greater than 5,817 AFY	All use in excess of allocation will be charged regular rate + $10.00/CCF	Yes

NOTES

4.2 SUPPLY AUGMENTATION

GSWC does not plan to add a new source of water supply to address customer demands but instead will consider increased supplies from existing sources. Table 3 reflects this approach and does not identify any new supplies. Instead, GSWC will focus on demand reduction measures in the event existing sources of supply are not sufficient to meet customer demands. As discussed in Chapter 4 of the UWMP, GSWC's sources of water supply include groundwater produced from the Chino Basin and Six Basins, treated water purchased from the City of Upland, and treated imported water purchased from MWD through TVMWD. As noted in Section 2, beginning July 1, 2022, GSWC has prepared and submitted an Annual Assessment which includes a review of water supplies available to meet water demands for the current and upcoming years. In the event GSWC is currently in, or considers entering into, one of the standard water shortage levels identified in Section 3, GSWC will consider the water supply (augmentation) actions described below.

For each water shortage level discussed in Section 3, GSWC will consider supplementing its existing treated imported water supplies through increased production of groundwater supplies, to the extent possible. Due to previous critically dry conditions, MWD developed the WSAP whereby available supplies are equitably allocated to its member agencies, including TVMWD. The WSAP establishes ten different shortage levels and a corresponding drought allocation to each member agency. Based on the shortage level established by MWD, the WSAP provides a reduced drought allocation to a member agency for its M&I retail demand. The ratio of MWD water supply drought allocation to local water supply will change based on the WSAP stage. The MWD drought allocation can be used to make Full Service water deliveries at the Tier 1 rate up to a Tier 1 allocation. Any Full Service water delivered in excess of a drought allocation is subject to a penalty rate in addition to the normal rate paid for the water.

In addition to the WSAP, MWD describes supply augmentation actions in its Regional 2025 UWMP, which is incorporated by reference. MWD's primary response to any gap between core supplies (from the State Water Project and Colorado River) and demand is to make optimal use of its supply augmentation options, consisting of drawing from flexible

supply programs and storage reserves. MWD has developed and actively manages a portfolio of water supply programs including water transfer, storage, and exchange agreements. MWD pursues voluntary water transfer and exchange programs to help mitigate supply/demand imbalances and provide additional dry-year supply sources. In addition, MWD has developed significant storage capacity in reservoirs, conjunctive use, and other groundwater storage programs totaling approximately 6.0 million acre-feet (AF). Pursuant to MWD's "Emergency Storage Objective", updated in 2019, approximately 750,000 AF of total stored water is emergency storage reserved by MWD for use in the event of supply interruptions. Based on MWD's historical and on-going water supply and storage programs and management practices, GSWC can potentially continue relying on purchased imported water supplies from MWD through TVMWD for adequate supply augmentation in response to each of the standard water shortage levels identified in Section 3. Water demands will be addressed through increased use of the local groundwater supplies and implementation of demand reduction measures through various stages of action.

GSWC has the flexibility to augment its existing water supplies through production of groundwater from Six Basins and the Chino Basin. As noted in Section 4.2 of the UWMP, Six Basins is managed by the Six Basins Watermaster and the Chino Basin is managed by the Chino Basin Watermaster. During the periods of management under the Six Basins Judgment and the Chino Basin Judgment, significant drought events have occurred. In each drought cycle, both the Six Basins and the Chino Basin have been managed to maintain water levels. Parties to the Six Basins Basin Judgment and Chino Basin Judgment, including GSWC, are authorized to produce groundwater in excess of their rights and pay assessments for such production to the respective Watermaster. The assessments are used to purchase untreated imported water to replenish Six Basins and the Chino Basin. The Six Basins Watermaster purchases untreated imported water to replenish the Six Basins from MWD through TVMWD. The Chino Basin Watermaster purchases untreated imported water to replenish the Chino Basin from MWD through Inland Empire Utilities Agency. In addition, groundwater quality in Six Basins and the Chino Basin is not expected to impact potable supplies or constrain supply reliability.

Groundwater quality is carefully monitored and managed by the Watermaster for each respective basin. In addition, treatment facilities in the Chino Basin have been developed at existing contamination sites to meet potable water standards and to prevent the spread of any groundwater contamination. Based on historical and on-going management practices, GSWC will use the treated imported water supply made available from MWD through TVMWD in association with each of the standard water shortage levels identified in Section 3. Water demands will be addressed through increased use of the local groundwater supplies and implementation of demand reduction measure through the various stages of action.

Table 3. Supply Augmentation and Other Actions

Submittal Table 8-2: Supply Augmentation and Other Actions			
Shortage Level	Supply Augmentation Methods and Other Actions by Water Supplier ***Drop down list*** *These are the only categories that will be accepted by the WUEdata online submittal tool*	How much is this going to reduce the shortage gap? *Include units used (volume type or percentage)*	Additional Explanation or Reference *(optional)*
1	Transfers	Not applicable (see Notes)	
2	Transfers	Not applicable (see Notes)	
3	Transfers	Not applicable (see Notes)	
4	Transfers	Not applicable (see Notes)	
5	Transfers	Not applicable (see Notes)	
6	Transfers	Not applicable (see Notes)	

NOTES: GSWC will consider increased production from Six Basins and the Chino Basin using existing facilities to address increased demands. As noted on Table 2, GSWC plans to implement demand reduction measures in the event water supplies from existing sources are not sufficient to meet anticipated demands.

4.3 OPERATIONAL CHANGES

During a water supply shortage situation, GSWC will manage its water supply resources to provide sufficient water supplies capable of meeting the demands of its customers. Section 4.1 describes GSWC's water supply sources and water supply augmentation actions available. Section 4.2 describes GSWC's standard water shortage levels and associated demand reduction measures. The supply augmentation actions and demand reduction measures, when implemented, may potentially result in short-term operational changes which are necessary to allow GSWC to utilize all available water supply sources in response to water shortage situations.

As noted in Section 2, beginning July 1, 2022, GSWC has prepared and submitted an Annual Assessment which includes a review of the water supplies available to meet water demands for the current and upcoming years. Preparation of the Annual Assessment assists GSWC in determining any potential operational changes. In addition, GSWC's standard water shortage levels and the associated demand reduction measures, in conjunction with GSWC's existing Demand Management Measures (discussed in Chapter 8 of the UWMP), will be essential to GSWC in reducing water demands during any water shortage period. The operational changes GSWC will consider in addressing non-catastrophic water shortages on a short-term basis include the following:

- Improved monitoring, analysis, and tracking of customer water usage to enforce demand reduction measures.
- Optimized production from existing available water supply sources.
- Potential use of emergency supply sources, including emergency interconnections.
- Potential blending of water supply resources.
- Improved monitoring, maintenance, and repairs to reduce water distribution system losses.

4.4 ADDITIONAL MANDATORY RESTRICTIONS

The mandatory restrictions which are implemented by GSWC to reduce customer demands are discussed in Section 4.2. There are no additional mandatory restrictions planned at this time.

4.5 EMERGENCY RESPONSE PLAN

Catastrophic water shortages are incorporated in GSWC's standard water shortage levels (identified in Section 3) and the associated demand reduction measures (described in Section 4.2). In addition to the water supply augmentation actions (Section 4.1) and potential operational changes (Section 4.3) which GSWC may consider in order to continue providing sufficient water supplies, GSWC will review and implement any necessary steps included in its "Emergency Response Plan".

As part of the "America's Water Infrastructure Act of 2018", community water systems serving a population greater than 3,300 people, including GSWC, are required to review and update their "Risk and Resilience Assessment" (RRA) and the associated ERP every five (5) years. However, due to security concerns regarding the submitting of these reports, water systems are required to submit certifications to the United States Environment Protection Agency (USEPA), confirming the current RRA and ERP have been reviewed and updated. For GSWC, the RRA certification is due by June 30, 2026, and the ERP certification is due by December 31, 2026.

GSWC's RRA, which is currently being reviewed and updated, evaluates the vulnerabilities, threats, and consequences from potential hazards to GSWC's water system. GSWC prepared its RRA (which is incorporated by reference) by evaluating the following items:

- Natural hazards and malevolent acts (i.e., all hazards);
- Resilience of water facility infrastructure (including pipes, physical barriers, water sources and collection, treatment, storage and distribution facilities, and electronic, computer and other automated systems);

- Monitoring practices;
- Financial systems (e.g., billing systems);
- Chemical storage and handling; and
- Operation and maintenance.

GSWC's RRA evaluated a series of potential malevolent acts, natural hazards, and other threats in order to estimate the potential "monetized risks" (i.e., associated economic consequences to both the water system and surrounding region, and the likelihood of occurrence) associated with GSWC's water facility assets. The cost-effectiveness of implementing potential countermeasures to reduce risks was also reviewed.

GSWC's ERP, which is currently being reviewed and updated, provides the management, procedures, and designated actions GSWC and its employees will implement during emergency situations (including catastrophic water shortages) resulting from natural disasters, system failures, and other unforeseen circumstances. GSWC's ERP (which is incorporated by reference) provides the guidelines for evaluating an emergency situation, procedures for activating an emergency response, and details of the different response phases in order to ensure that customers receive a reliable and adequate supply of potable water. The scope of the ERP includes emergencies which directly affect the water system and the ability to maintain safe operations (such as chlorine release, an earthquake, or a threat of contamination). The ERP also incorporates the results of GSWC's RRA and includes the following:

- Strategies and resources to improve resilience, including physical and cybersecurity.
- Plans and procedures for responding to a natural hazard or malevolent act.
- Actions and equipment to lessen the impact of a natural hazard or malevolent act.
- Strategies to detect natural hazards or malevolent act.

GSWC will review the ERP for procedures regarding the utilization of alternative water supply sources in response to water supply shortages, including during the standard water shortage levels. GSWC will also review applicable procedures described in the

ERP regarding any necessary temporary shutdown of water supply facilities, including appropriate regulatory and public notifications.

4.6 SEISMIC RISK ASSESSMENT AND MITIGATION PLAN

CWC 10632.5.

(a) In addition to the requirements of paragraph (3) of subdivision (a) of Section 10632, beginning January 1, 2020, the plan shall include a seismic risk assessment and mitigation plan to assess the vulnerability of each of the various facilities of a water system and mitigate those vulnerabilities.

(b) An urban water supplier shall update the seismic risk assessment and mitigation plan when updating its urban water management plan as required by Section 10621.

(c) An urban water supplier may comply with this section by submitting, pursuant to Section 10644, a copy of the most recent adopted local hazard mitigation plan or multihazard mitigation plan under the federal Disaster Mitigation Act of 2000 (Public Law 106-390) if the local hazard mitigation plan or multihazard mitigation plan addresses seismic risk.

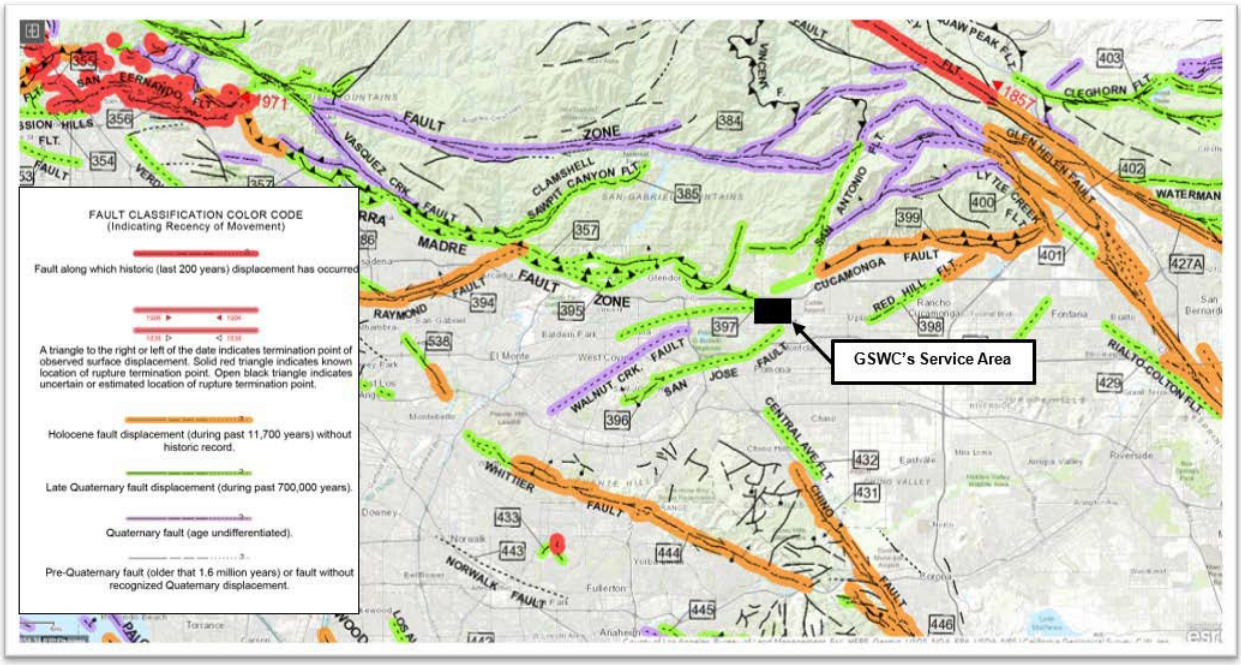
The City of Claremont (GSWC) prepared a local "Natural Hazards Mitigation Plan" which was approved by the Federal Emergency Management Agency (FEMA) in 2022. The "Natural Hazards Mitigation Plan" identifies effective ways to assess the significant natural hazards including earthquakes) that may affect GSWC and its residents. The "Natural Hazards Mitigation Plan" provides resources, information, and strategies to reduce GSWC's vulnerability to these hazards, while providing guidance for the coordination of mitigation activities throughout GSWC. The "Natural Hazards Mitigation Plan" includes mitigation projects necessary to reduce seismic risk to GSWC's water distribution system facilities (including its distribution system pipelines, groundwater wells, booster pumps, and storage reservoirs) and potential disruptions in providing water service. GSWC's "Local Hazards Mitigation Plan" is provided in Appendix B.

The County of Los Angeles prepared a "All-Hazards Mitigation Plan" in 2025 which identified methods to assess significant natural hazards (including earthquakes) affecting areas throughout Los Angeles County, and the mitigation strategies necessary to reduce

risks, including seismic risk. The County's "All-Hazards Mitigation Plan" is provided in Appendix C.

The California Geological Survey has published the locations of numerous faults which have been mapped in the Southern California region. Although the San Andreas fault is the most recognized and is capable of producing an earthquake with a magnitude greater than 8 on the Richter scale, some of the lesser-known faults have the potential to cause significant damage. The locations of these earthquake faults in the vicinity of GSWC's water service area are provided in the figure below. The faults that are located in close proximity to and could potentially cause significant shaking in GSWC's water service area include the San Andreas fault, the Walnut Creek fault, the San Jose fault, the Red Hill fault, the Raymond fault, the Cucamonga fault, and the Sierra Madre fault.

Location of Earthquake Faults

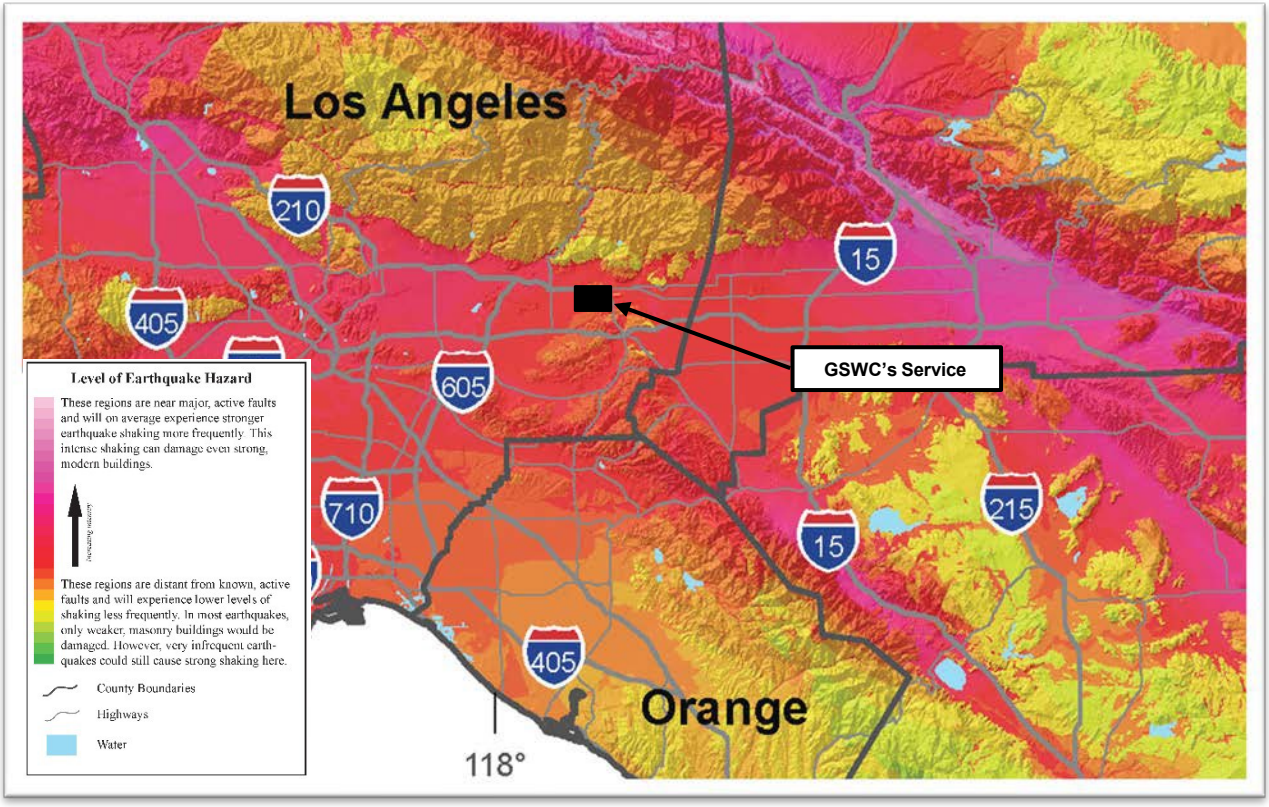


Source: https://maps.conservation.ca.gov/cgs/fam/App/

The following figure provides the relative intensity of ground shaking in the vicinity of GSWC's service area from anticipated future earthquakes. The locations of relatively long-period (1.0 second) earthquake shaking, including GSWC's service area, are provided. Long-period shaking affects tall, relatively flexible buildings, but also correlates

with earthquake damage. The shaking potential is calculated based on the level of ground motion that has a 2 percent chance of being exceeded in 50 years (or the level of ground-shaking with an approximate 2,500-year average repeat time). As discussed in Section 4.5, GSWC is preparing an Emergency Response Plan which provides the management, procedures, and designated actions GSWC and its employees will implement during emergency situations resulting from natural disasters, including during earthquakes, to ensure that customers receive a reliable and adequate supply of potable water. GSWC's ERP is incorporated by reference.

Earthquake Shaking Potential



Source: "Earthquake Shaking Potential for California", 2016, California Geological Survey and United States Geological Survey

4.7 SHORTAGE RESPONSE ACTION EFFECTIVENESS

The effectiveness of the shortage response actions for each of the standard water shortage levels identified in Section 3 is evident in GSWC's historical ability to meet its

customer's water demands in response to a water supply shortage. In addition, GSWC imposes water consumption regulations and restrictions, and supports local agencies in efforts to enforce regulations and prohibitions on water use. The effectiveness of each of GSWC's shortage response actions, in order to reduce any potential gaps between supply and demand, has been quantified in the expected demand reduction provided in Table 2 and Table 3.

During the past 5 years, GSWC experienced a consecutive two-year drought within its service area from FY 2021 to FY 2022. Throughout this extended dry year period, the GSWC's annual water production averaged 9,915 acre-feet per year (AFY). During the past five years, the average annual production was approximately 8,635 AFY, with a maximum of 10,370 AF during FY 2021. GSWC has been able to provide sufficient water supplies to its customers, including during long-term droughts and years with historically high water demands. In addition, GSWC has been able to provide water service to meet maximum day water demands for these years, including during the summer months.

GSWC's water demands during the most recent five years averaged approximately 7,063 AFY of potable water. Due to conservation efforts and demand management measures (discussed in Chapter 8 of the UWMP), GSWC's recent water demands have been less than its historical water demands, including during long-term droughts. GSWC's projected water demands (during a normal year, a single dry year, and a five consecutive year drought conditions) are provided in Section 5.3 of the UWMP and are anticipated to reflect similar reductions as a result of the shortage response actions, ongoing conservation efforts, and demand management measures. It is anticipated GSWC will be able to continue providing sufficient water supplies to its customers to meet projected water demands, including during long-term droughts. In addition, as discussed in Section 4.1, based on historical and on-going management practices, GSWC will be able to continue relying on its water supply sources from the Six Basins and Chino Basin for adequate supply augmentation in response to each of the standard water shortage levels identified in Section 3.

GSWC previously adopted Schedule 14.1-CM in July 2015 which declared a water supply

shortage and established water-use restrictions and regulations equivalent to the standard water shortage level 1 identified in Section 3. During this Level 1 water shortage period, GSWC was able to reduce water demands by up to 10 percent and provide sufficient water supplies to its customers. Copies of Schedule 14.1-CM are provided in Appendix A.

Based on GSWC's demonstrated ability to meet water demands during past water supply shortages, the adopted water shortage levels, the adjusted operating safe yields, and water supplies during long-term droughts, it is anticipated that GSWC will be able to provide sufficient water supplies to its customers during each of its standard water shortage levels. Although adequate supplies are anticipated, the cost of those water supplies may become incrementally more expensive. GSWC will enact varying levels of its WSCP to encourage retail customers to reduce water consumption and at the same time, reduce the need to use the more expensive water supplies. Notwithstanding, the effectiveness of each of GSWC's shortage response actions, in order to reduce any potential gaps between supply and demand, has been quantified in the expected demand reduction section provided in Table 2 and Table 3. The effectiveness of GSWC's shortage response actions is based on GSWC's water demands prior to 2015 (unconstrained demands). GSWC reduced its water demands in 2015 in response to the Governor's April 1, 2015 Executive Order B-29-15 which mandated statewide reduction in water use of 25 percent. During this period, GSWC was able to reduce its water demands by approximately 28 percent. This historical water demand reduction was used to estimate the extent of water use reductions for GSWC's Water Shortage Stages. GSWC's Water Shortage Levels 1, 2, 3, 4, 5, and 6 are expected to reduce water demands by up to 10%, 20%, 30%, 40%, 50%, and greater than 50%, respectively.

5 COMMUNICATION PROTOCOLS

CWC 10632.

(a)(5) Communication protocols and procedures to inform customers, the public, interested parties, and local, regional, and state governments, regarding, at a minimum, all of the following:

(A) Any current or predicted shortages as determined by the annual water supply and demand assessment described pursuant to Section 10632.1.

(B) Any shortage response actions triggered or anticipated to be triggered by the annual water supply and demand assessment described pursuant to Section 10632.1.

(C) Any other relevant communications.

Since July 1, 2022, GSWC has submitted an Annual Assessment in accordance with DWR's guidance and requirements. The Annual Assessment includes a review of GSWC's unconstrained water demands (i.e., water demands prior to any projected response actions GSWC may trigger under this WSCP) for the current year and the upcoming (potential single dry) year. GSWC also includes information regarding anticipated shortages, triggered shortage response actions, compliance and enforcement actions, and communication actions consistent with GSWC's WSCP. See Section 2 for further discussion of the Annual Assessment.

GSWC may elect to activate voluntary conservation pursuant to CPUC's Rule 14.1, described in Section 4, by notifying the Director of the CPUC's Division of Water and Audits (DWA). GSWC will notify customers through a bill insert or direct mailing.

GSWC may elect to establish mandatory conservation measures and standard water shortage levels by requesting the addition of a Schedule 14.1 tariff, through a Tier 2 advice letter to CPUC. Upon approval of establishing Schedule 14.1, GSWC may then request activation of a water shortage level via a Tier 2 advice letter to CPUC, if necessary. GSWC also may request a loss revenue memorandum account at this time. The Tier 2 advice letter to establish Schedule 14.1 includes but is not limited to:

- Applicability,
- Territory applicable to,
- A detailed description of each water shortage level,
- A detailed description of the trigger that activates each water shortage level,
- A detailed description of each water use restriction for each water shortage level,
- Water use violation levels, written warning levels, associated fines, if applicable, and exception procedures.
- Conditions for installation of a flow restrictor,
- Charges for removal of flow restrictors, and
- Special conditions.

The Tier 2 advice letter requesting activation of the established Schedule 14.1 shall include but not be limited to justification for activating a particular water shortage level and the period during which the water shortage level will be in effect. GSWC must consult CPUC's DWA staff prior to filing the advice letter in order to determine details of the public meeting. GSWC shall then notify the customer of each Tier 2 advice letter filed with CPUC and details of the associated CPUC public hearing by bill inserts or direct mailing.

Upon approval, GSWC shall notify its customers of the activation of a water shortage level by means of bill inserts or direct mailing. Notification shall take place prior to imposing any fines associated with the activated water shortage level. If activation of a water shortage level by Schedule 14.1 would occur one year or more since the public hearing associated with establishing Schedule 14.1, then GSWC shall conduct a public hearing prior to activation of the water shortage level. GSWC shall provide its customers with updates in at least every other bill regarding its water supply status and the results of the customers' conservation efforts.

Under unique circumstances where a specific requirement of this WSCP would result in undue hardship to a customer that is disproportionate to the impacts on other customers, then the customer may apply for an exemption or appeal by completing an Appeals form available online at GSWC's website or the GSWC - Claremont office. GSWC shall

respond to each request in writing.

6 COMPLIANCE AND ENFORCEMENT

CWC 10632.

(a)(6) For an urban retail water supplier, customer compliance, enforcement, appeal, and exemption procedures for triggered shortage response actions as determined pursuant to Section 10632.2.

Any violation of this WSCP is considered a waste and an unreasonable use of water. In the event a customer is observed to be using water for any nonessential or unauthorized use as defined by this WSCP, GSWC may charge a water use violation fine in accordance with Schedule 14.1.

GSWC may, after one written warning, install a flow restricting device on the service line of any customer observed by GSWC personnel to be using water in violation of the WSCP. A flow-restricting device shall not restrict water delivery by greater than 50 percent of normal flow and shall be capable of providing the property with a minimum of 3 CCF/person/month. The restricting device may be removed only by GSWC staff, after a three-day period has elapsed, and upon payment of the appropriate removal charge as set forth in Schedule No. 14.1.

After removal of the restricting device, if any nonessential or unauthorized use of water continues, GSWC may install another flow restricting device without written notice. This device shall remain in place until water supply conditions warrant its removal and until the appropriate charge for removal has been paid to GSWC.

Any tampering with a flow restricting device by a customer can result in discontinuation of water use at GSWC's discretion.

7 LEGAL AUTHORITIES

CWC 10632.

(a)(7)(A) A description of the legal authorities that empower the urban water supplier to implement and enforce its shortage response actions specified in paragraph (4) that may include, but are not limited to, statutory authorities, ordinances, resolutions, and contract provisions.

(B) A statement that an urban water supplier shall declare a water shortage emergency in accordance with Chapter 3 (commencing with Section 350) of Division 1.

(C) A statement that an urban water supplier shall coordinate with any city or county within which it provides water supply services for the possible proclamation of a local emergency, as defined in Section 8558 of the Government Code.

CWC Division 1, Section 350

The governing body of a distributor of a public water supply, whether publicly or privately owned and including a mutual water company, shall declare a water shortage emergency condition to prevail within the area served by such distributor whenever it finds and determines that the ordinary demands and requirements of water consumers cannot be satisfied without depleting the water supply of the distributor to the extent that there would be insufficient water for human consumption, sanitation, and fire protection.

GSWC is an investor-owned supplier and is subject to CPUC approval to establish and/or activate necessary shortage response actions and corresponding water shortage levels, pursuant to CPUC Rule 14.1. GSWC is then responsible for implementing and enforcing the water shortage response actions. GSWC may update current water shortage condition response measures based on CPUC approvals and direction, state policy directives, emergency conditions, or to improve customer response.

Pursuant to GSWC's Ordinance No. 2009-10, customers are obligated to fix leaks, breaks or malfunctions in their plumbing or distribution system within five (5) days of written notice from the City or from the customer's retail water agency, including GSWC.

GSWC may declare a waters shortage emergency and implement any shortage response action deemed necessary, upon CPUC approval. Upon declaration of a water shortage

emergency, GSWC shall coordinate with the local cities and counties within their service area for the possible proclamation of a local emergency. This includes the Cities of Claremont, Montclair, and Upland, and the County of Los Angeles.

GSWC shall declare a water shortage emergency in accordance with CA Water Code CHAPTER 3 - Water Shortage Emergencies § 350 – 358. Legal authorities include California Water Code Sections 71640-71644 Article 3. Water Shortages and CA Water Code § 366 (2025) CHAPTER 3.3 - Excessive Residential Water Use During Drought.

8 FINANCIAL CONSEQUENCES OF WSCP

CWC 10632.

(a)(8) A description of the financial consequences of, and responses for, drought conditions, including, but not limited to, all of the following:

(A) A description of potential revenue reductions and expense increases associated with activated shortage response actions described in paragraph (4).

(B) A description of mitigation actions needed to address revenue reductions and expense increases associated with activated shortage response actions described in paragraph (4).

(C) A description of the cost of compliance with Chapter 3.3 (commencing with Section 365) of Division 1.

To ensure compliance with CWC Chapter 3.3 (commencing with Section 365), additional costs may be incurred to monitor and enforce WSCP actions. These costs may vary depending on the applicable water shortage stage and the duration of the water shortage emergency.

Potential revenue reductions and expense increases associated with activated shortage response actions are regulated and tracked by CPUC memorandum accounts.

GSWC anticipates potential impacts in revenue associated with rates and surcharges. If GSWC establishes a CPUC-approved surcharge to customers to recover revenue, GSWC anticipates that the increase in rates may result in a decline of water usage. Also,

the quantity tariff rate may cause a decline in water sales and further reduction in revenue.

GSWC anticipates potential impacts in expenditures associated with operations. An increase in staff cost may be triggered by salaries and benefits for new hires required to administer and implement the WSCP. Necessary alternative sources of water supply may also increase operations and maintenance costs. Additionally, a new water supply may increase cost of supply and treatment.

Money collected through water use violation fines shall not be accounted for as income but rather booked to a memorandum account to offset authorized expenses incurred or recovery of lost revenue.

All expenses incurred to establish and/or activate Schedule 14.1-CM that have not been considered in a General Rate Case or other proceedings, shall be recoverable by GSWC, as approved by the CPUC. GSWC shall recover expenses in a separate memorandum account for disposition as directed from time to time by the CPUC.

9 MONITORING AND REPORTING

CWC 10632.

(a)(9) For an urban retail water supplier, monitoring and reporting requirements and procedures that ensure appropriate data is collected, tracked, and analyzed for purposes of monitoring customer compliance and to meet state reporting requirements.

GSWC's Water Loss Control Program is used to prepare the annual water loss audits and monitor water losses. GSWC's Operations Engineering Department reviews the audits to track real and apparent losses. Losses are monitored by comparing water production to sales. The Operations Engineer contracts leak detection companies to perform a survey if necessary. If the survey indicates water losses exceed water system goals, a full audit will be performed to identify water loss sources and impacts on the overall water system. Leak locations and work orders for repairs are also documented and processed for potential water use violations and future water loss control actions.

GSWC also conducts an annual review of the Master Plan to address any anticipated water shortage, triggered shortage response actions, compliance and enforcement actions, and communication actions. Additional monitoring and reporting requirements are approved by CPUC.

10 WSCP REFINEMENT PROCEDURES

CWC 10632.

(a)(10) Reevaluation and improvement procedures for systematically monitoring and evaluating the functionality of the water shortage contingency plan in order to ensure shortage risk tolerance is adequate and appropriate water shortage mitigation strategies are implemented as needed.

GSWC's WSCP has been prepared as an adaptive management plan. As discussed in Section 9, GSWC will monitor and report on the implementation of the WSCP. GSWC will review the implementation results for any current or potential shortage gaps between water supplies and demands. GSWC will evaluate the need for revising the WSCP in order to resolve any shortage gaps, as necessary. GSWC will consider the following potential revisions in the event of a potential shortage gap:

- Implementation of additional public outreach, education, and communication programs (in addition to the programs discussed in Chapter 8 of the UWMP).
- Implementation of more stringent water use restrictions under the standard water shortage levels (discussed in Section 4.2).
- Implementation of stricter enforcement actions and penalties (discussed in Section 6).
- Improvements to the water supply augmentation responses (discussed in Section 4.1), as well as any associated operational changes (discussed in Section 4.3) which may be required.
- Incorporation of additional actions recommended by GSWC staff or other interested parties.

GSWC will use the monitoring and reporting data to evaluate the ability for these potential revisions to resolve any shortage gaps which may occur within the standard water shortage levels.

This WSCP is adopted as part of GSWC's 2025 UWMP adoption process discussed in Section 9.2 of the UWMP. It is anticipated GSWC will review, revise, and adopt an updated WSCP as part of preparing its 2030 UWMP as necessary. However, GSWC will continue to review the monitoring and reporting data, and if needed, update the WSCP more frequently. Any updates to GSWC's WSCP will include a public hearing and adoption process by the GSWC's Board (see Section 12).

11 SPECIAL WATER FEATURE DISTINCTION

CWC 10632.

(b) For purposes of developing the water shortage contingency plan pursuant to subdivision (a), an urban water supplier shall analyze and define water features that are artificially supplied with water, including ponds, lakes, waterfalls, and fountains, separately from swimming pools and spas, as defined in subdivision (a) of Section 115921 of the Health and Safety Code.

GSWC's WSCP defines "decorative water features" as water features which are artificially supplied with water, including ponds, lakes, waterfalls, and fountains, but excluding pools and spas. In general, there are additional health and safety considerations in the water supplied to pools and spas compared to decorative water features. As a result, GSWC's WSCP has reviewed the response actions, enforcement actions, and monitoring and reporting programs separately for decorative water features and for pools and spas, as applicable.

Please see Section 4.2. for demand reduction actions in relation to special water features.

12 PLAN ADOPTION, SUBMITTAL, AND AVAILABILITY

CWC 10632.

(c) The urban water supplier shall make available the water shortage contingency plan prepared pursuant to this article to its customers and any city or county within which it provides water supplies no later than 30 days after adoption of the water shortage contingency plan.

CWC 10635.

(c) Provide supporting documentation that Water Shortage Contingency Plan has been, or will be, provided to any city or county within which it provides water, no later than 30 days after the submission of the plan to DWR.

GSWC's WSCP is adopted as part of GSWC's 2025 UWMP adoption process discussed in Chapter 9 of the UWMP. The process for adopting GSWC's WSCP includes the following:

- GSWC will conduct a public hearing and make the WSCP available for public inspection.
- GSWC will provide notification of the time and place of the public hearing to any city or county in which water is provided.
- GSWC will publish notice of public hearing in a newspaper once a week, for two successive weeks (with at least five days between publication dates).
- GSWC's Board will adopt the 2025 UWMP and the WSCP.
- As part of submitting the 2025 UWMP to DWR, GSWC will also submit the WSCP (electronically through DWR's online submittal tool) within 30 days of adoption and by July 1, 2026. GSWC will submit a copy of the WSCP to the California State Library and to any city or county in which water is provided within 30 days of adoption. In addition, GSWC will make the WSCP available for public review within 30 days of adoption.

If there are any subsequent amendments required, the process for adopting an amended WSCP includes the following:

- GSWC will conduct a public hearing and make the amended WSCP available for public inspection.
- GSWC's Board will adopt the amended WSCP.
- GSWC will submit the amended WSCP to DWR (electronically through DWR's online submittal tool) within 30 days of adoption.
- Within 30 days after submission of the WSCP to DWR, GSWC will provide the WSCP to any city or county within which GSWC provides water.

Additional information regarding the adoption, submittal, and availability of GSWC's WSCP (and 2025 UWMP) is provided in Chapter 9 of the UWMP.

APPENDIX A

WATER CONSERVATION ORDINANCES AND RULES

Rule No. 14.1
Water Conservation And Reduction Plan T

GENERAL INFORMATION

1. If requested by a water wholesaler or government agency or if water supplies are projected to be insufficient to meet normal customer demands and are beyond the control of the utility, the utility may elect to activate voluntary conservation using the portion of this plan set forth in Section A of this Rule, after notifying the Director of the Commission's Water Division (WD) of its intent in e-mailed format. The utility's customers shall be notified of the voluntary conservation measures through a bill insert, direct mailing, or electronic notification. (T) (T)

2. Prior or subsequent to the declaration of mandatory reduction by a water wholesaler or government agency, or in the opinion of the utility, mandatory conservation or reduction is needed, the utility may request adding a Schedule No. 14.1 – Water Shortage Contingency Plan with Staged Mandatory Restrictions, Reductions And Drought Surcharges tariff (Schedule No. 14.1), via a Tier 2 advice letter. The utility may request a lost revenue memorandum account at this time. (T) (T)

(D)

3. Schedule No. 14.1 complies with the requirements of the Water Shortage Contingency Plan (WSCP) in Water Code Section 10632 of the Urban Water Management Planning Act. (N)

4. The WSCP requires water suppliers to adopt six water shortage stages, which correspond to progressively severe water shortage conditions (up to 10%, 20%, 30%, 40%, 50%, and greater than 50% shortage) as compared to normal reliability conditions. These water shortage stages have been standardized to allow for a consistent regional and statewide approach to conveying the relative severity of water supply shortage conditions. Reduction of available water supply by the indicated percentages or an equivalent regulatory requirement will trigger an appropriate water shortage stage, and GSWC will implement the response actions as specified in Schedule No. 14.1. (N)

5. The utility shall file a Tier 2 advice letter to request activation of a particular stage of Schedule No. 14.1. (T)

   a. If a Declaration of Mandatory Reductions is made by utility, wholesale supplier, or governing agency, or (T)

   b. If the utility is unable to address voluntary conservation levels set by itself, its wholesale supplier, or governing agency, or (T)

   c. If the utility chooses to activate a greater shortage stage (T)

(L)

(L)

(Continued)

Rule No. 14.1
Water Conservation And Reduction Plan (T)

GENERAL INFORMATION (Continued)

6. When Schedule No. 14.1 is activated and the utility determines that water supplies are again sufficient to meet normal demands, and mandatory rationing measures are no longer necessary, the utility shall seek Commission approval via a Tier 1 advice letter to deactivate the particular stage of mandatory reduction that had been authorized.

7. In the event of a water supply shortage requiring a voluntary or mandatory conservation or demand reduction program, the utility shall make available to its customers water conservation kits as required by its version of Rule No. 20. The utility shall notify all customers of the availability of conservation kits via a bill insert, direct mailers, or electronic notification. (T) (T) (T)(L)

A. VOLUNTARY CONSERVATION (T)

1. Other than upon request, water should not be served in eating and drinking establishments, including but not limited to restaurants, hotels, cafes, bars, or other public places where food or drink are served and/or purchased. (L) (T)
2. Hotels/motels must provide guests with the option of choosing not to have towels and linens laundered daily and prominently display notice of this option. (N)
3. Potable water used for irrigation outside of newly constructed homes and buildings shall only be delivered by drip or micro spray systems.
4. Commercial, industrial, and institutional properties, such as campuses, golf courses, and cemeteries, shall immediately implement water efficiency measures to reduce potable water use in an amount consistent with the required reduction. (N)

B. NON-ESSENTIAL OR UNAUTHORIZED WATER (T)

1. No customer shall use utility-supplied water for non-essential or unauthorized uses as defined by the State of California or local ordinances. (D)

2. Water waste resulting from a failure to repair or mitigate any leaks, breaks, or other malfunction in a customer's domestic or outdoor water system within forty-eight (48) hours of notification by the utility, unless other specific arrangements are made and agreed to by the utility, may result in termination of service in accordance with Rule No. 11. (T) (T)

3. The application of potable water to outdoor landscapes in a manner that causes runoff onto adjacent property, non-irrigated areas, private and public walkways, roadways, parking lots, or structures. (T) (T) (L) (L)

(Continued)

Rule No. 14.1
Water Conservation And Reduction Plan (T)

B. NON-ESSENTIAL OR UNAUTHORIZED WATER USE (Continued) (L)

4. The use of a hose that dispenses potable water to wash a motor vehicle, except where the hose is fitted with a shutoff nozzle or device attached to it that causes it to cease dispensing water immediately when not in use. (T) (T) (T)

5. The use of potable water for washing buildings, structures, sidewalks, walkways, patios, tennis courts, or other hard surfaced, nonporous areas except to protect the health and safety of the public.

(D)

6. Use of potable water for watering streets with trucks or other vehicles, except for initial wash-down for construction purposes (if street sweeping is not feasible), or to protect public health and safety.

(D) (D) (D) (D)

7. The use of portable water in a fountain or other decorative water feature, except where the water is part of a recirculating system. (T) (T)

(D)

8. The use of potable water for the irrigation of non-functional turf at commercial, industrial and institutional sites. (N)

9. The use of potable water for watering outside plants, lawn, landscape, and turf area during certain hours prohibited by applicable laws or rules, during and up to 48-hours after measurable rainfall (0.1" or more). (T) (T) (T)

10. The use of potable water for irrigation or ornamental turf on public street medians. (N)

(D)

The outdoor irrigation restriction does not apply to trees or edible vegetation watered solely by drip or micro spray systems. (N) (N)

(L)
|
(L)

(Continued)

Rule No. 14.1
Water Conservation And Reduction Plan T

C. STAGED MANDATORY REDUCTION OF WATER USAGE (L)

1. Prior to implementing mandatory reduction due to declaration by a water wholesaler, government agency or the utility water supply shortage conditions (per Water Code Section 350), a utility may request the addition of a Schedule No. 14.1 – Water Shortage Contingency Plan with Staged Mandatory Restrictions, Reductions And Drought Surcharges tariff, via a Tier 2 advice letter, with full justification. The utility may not activate Schedule No. 14.1 until authorized to do so by the Commission as delegated to WD. (T)
2. A staged Schedule No. 14.1 authorized by the Commission shall remain dormant until triggered by specific conditions detailed in the Schedule No. 14.1 tariff and the utility has requested and received authorization for activating a stage by the Commission in response to a Tier 2 advice letter. (T) (T)
3. Notice of the Tier 2 advice letter and associated public participation hearing, if required, shall be provided to customers through a bill insert, direct mailing, or by electronic notification. (T)
4. The Utility shall comply with all requirements of Sections 350-358 of the California Water Code. (T)
5. The Tier 2 advice letter requesting the addition of a Schedule No. 14.1 shall include but not be limited to: (T) (L)
   a. Proposed Schedule No. 14.1 tariff, which shall include but not be limited to:
      i) Applicability,
      ii) Territory applicable to,
      iii) A detailed description of each Stage of Reduction, (T)
      iv) A detailed description of the Trigger that Activates each Stage of Reduction, (T)
      v) A detailed description of each water use restriction for each stage of reduction, (T)
      vi) Water use violation levels, written warning levels, associated fines, if applicable, and exception procedures,
      vii) Conditions for installation of a flow restrictor,
      viii) Charges for removal of flow restrictors, and
      ix) Special Conditions.
   b. Justification, documentation and calculations in support of the plan. (T)

(L)

(L)

(Continued)

Rule No. 14.1
Water Conservation And Reduction Plan T

C. STAGED MANDATORY REDUCTION WATER USAGE (Continued)

6. All monies collected by the utility through water use violation fines shall not be accounted for as income but rather booked to a memorandum account to offset authorized expenses incurred or recovery of lost revenue. Lost revenues associated with reduced sales as a result of activation of either Rule No. 14.1 or Schedule No. 14.1 for a non-WRAM utility should be tracked in a separate memorandum account for disposition as directed or authorized from time to time by the Commission. (L)

7. All expenses incurred by utility to activate Rule No. 14.1 and Schedule No. 14.1 that have not been considered in a General Rate Case or other proceeding, shall be recoverable by utility if determined to be reasonable by Commission. These monies shall be accumulated by the utility in a separate memorandum account for disposition as directed or authorized from time to time by the Commission.

8. Number of stages requested by the district/service area may vary, depending on specifics of water shortage event. The utility shall file a Tier 2 advice letter to request activation of a particular stage of Schedule No. 14.1 under the following conditions: (T)(L) (T)

   a. If the utility is unable to achieve desired conservation levels set by itself, wholesale supplier or governing agency through voluntary conservation, or (T)(L) (T)(L)

   b. If a Declaration of Mandatory Reduction is made by the utility, wholesale supplier or governing agency, or (T) (L)

   c. If a government agency with legal jurisdiction over the utility or its service area declares a state of emergency in response to severe drought conditions, earthquake or other catastrophic event that severely reduces the utility's water supply, or (N)

   d. If voluntary conservation levels or mandatory restrictions on certain uses of water, set by the Commission, the utility, wholesale water supplier, or government agency are insufficient, or (N)

   e. If the utility chooses to activate a greater stage with justification and approval by the Commission. (T)(L)

9. The Tier 2 advice letter requesting activation of a Schedule 14.1 shall include but not be limited to:

   a. Justification for activating this particular stage of mandatory reduction, as well as period during which this particular stage of mandatory conservation and reduction measures will be in effect. (T) (T)

   b. When the utility requests activation of a particular Stage, it shall notify its customers as detailed in Section E below.

Rule No. 14.1
Water Conservation And Reduction Plan T

D. ENFORCEMENT OF STAGED MANDATORY CONSERVATION AND REDUCTION (T)

1. The water use restrictions in Section A of this Rule, become mandatory when the Schedule No. 14.1, Stage 2 or higher is triggered, the utility files a Tier 2 advice letter requesting activation of a Stage 2 or higher, and authorization is received from the Commission as delegated to WD. (T) (T)

2. The nonessential or unauthorized water use listed in Section B of this Rule are always mandatory. (D) (N)

3. Each stage of Schedule No. 14.1 has an associated drought surcharge that may be implemented based on local conditions and/or conservation and reduction targets. (T) (T)

4. The utility may after one written warning, install a flow restricting device on the service line of any customer observed or proven by utility personnel to be using water for any nonessential or unauthorized use as defined in Section A or B above when Schedule No. 14.1 Stage 2 or higher has been activated. (T) (T)

   a. A flow restrictor shall not restrict water delivery by greater than 50% of normal domestic flow and shall be capable of providing the premise with a minimum flow of 50 Gallons Per Capita Per Day (GCPD). The restricting device may be removed only by the utility, only after a (7) seven-day period has elapsed, and only upon payment of the appropriate removal charge as setforth in Schedule No. 14.1. (T) (T)

   b. After the removal of the restricting device, if any non-essential or unauthorized use of water continues, the utility may install another flow restricting device without written notice. This device shall remain in place until water supply conditions warrant its removal and until the appropriate charge for removal is paid to the utility.

   c. Customer tampering with flow restricting device may result in discontinuation of water service at the utility's discretion. (T)

   d. If, despite installation of such flow-restricting device pursuant to the provisions of the previous enforcement conditions, any non-essential or unauthorized use of water continues, then the utility may discontinue water service to such customer. In such event, a charge as provided in Rule No. 11, Section C shall be paid to the utility as a condition of restoration of service. (T)

(Continued)

Rule No. 14.1
Water Conservation And Reduction Plan T

(D)
(D)

E. APPEAL PROCEDURE

1. Any customer who seeks a variance from any of the provisions of this Water Conservation and Reduction Plan shall notify the utility in writing using the appeals form, explaining in detail the reason for such a variation. The utility shall respond to each such request in writing.

2. Any customer not satisfied with the utility's response may contact the Commission. (T)

3. Except as set forth in this Section, no person shall have any right or claim in law or in equity, against the utility because of, or as a result of, any matter or thing done or threatened to be done pursuant to the provisions of the Water Conservation and Reduction Plan. (T)

F. PUBLICITY (L)

1. As stated under Section C.3, when a utility requests the addition of a Schedule No. 14.1, via a Tier 2 advice letter, it shall provide notice of the Tier 2 advice letter and associated public hearing, if applicable, provided to customers through bill inserts, direct mailing, or electronic notification and shall comply with all requirements of Sections 350-358 of the California Water Code (CWC), including but not limited to the following: (T)

   a. In order to be in compliance with both the General Order 96-B and CWC, the utility shall provide notice via both newspaper and bill insert, direct mailing or electronic notification.

   b. Utility shall file one notice for each advice letter filed, that includes both notice of the filing of the Tier 2 advice letter as well as the details of the public hearing (date, time, place, etc.).

   c. The public meeting, if required, shall be held after the utility files the Tier 2 advice letter, and before the Commission authorizes the addition of Schedule No. 14.1 to the tariff except in cases of emergency water shortages approved by WD. (T)

   d. Utility shall consult with WD staff prior to filing advice letter, in order to determine details of public meeting.

(L)

(L)
(L)

Rule No. 14.1
Water Conservation And Reduction Plan T

F. PUBLICITY (Continued)

2. In the event that a Schedule No. 14.1 is activated, and a utility requests activation through the filing of a Tier 2 advice letter, the utility shall notify its customers and provide each customer with a copy of Schedule No. 14.1 by means of bill insert, direct mailing or electronic notification. Notification shall take place prior to imposing any surcharges associated with this plan. If activation of Schedule No. 14.1 occurs one year or more since the public hearing associated with adding Schedule No. 14.1 to its tariffs, then the utility shall conduct a public hearing pursuant to CWC Section 351 prior to activating the mandatory reduction stage.

3. During the period that a stage of Schedule No. 14.1 is activated, the utility shall provide customers with updates regarding its water supply status and the results of customers' conservation efforts. These updates may occur through bill inserts, website updates, or other means of communication. (T) (T) (T)

Schedule No. 14.1
Water Shortage Contingency Plan (T)
With Staged Mandatory Restrictions, Reductions And Drought Surcharges (T)

A. APPLICABILITY

This Schedule applies to all Golden State Water Company (GSWC) water customers in all Customer Service Areas. This Schedule is effective in times of voluntary conservation or mandatory rationing, as required by Rule No. 14.1. To the extent any provision in this Schedule is inconsistent with Rule No. 14.1, the provisions of this Schedule apply. The drought emergency surcharges listed in this Schedule are in addition to the regular water-use charges under the applicable Schedules as authorized by the California Public Utilities Commission (CPUC) for the respective ratemaking area.

B. TERRITORY

This Schedule is applicable to all GSWC water customers in California.

C. MANDATORY RESTRICTIONS (T) (L) (L) (N) (N)

The State Water Resources Control Board has established the following mandatory restrictions for all water users.

No Customer shall use utility-supplied water for non-essential or unauthorized uses as defined below; customers shall take actions to reduce non-essential and unauthorized water use accordingly as identified below: (L)

a. The application of potable water to outdoor landscapes in a manner that causes runoff onto adjacent property, non-irrigated areas, private and public walkways, roadways, parking lots, or structures.
b. The use of a hose that dispenses potable water to wash a motor vehicle, except where the hose is fitted with a shut-off nozzle or device attached to it that causes it to cease dispensing water immediately when not in use.
c. The use of potable water for washing buildings, structures, sidewalks, walkways, patios, tennis courts, or other hard-surfaced, non-porous areas.
d. The use of potable water in a fountain or other decorative water feature, except where the water is part of a recirculating system.
e. The use of potable water for watering outside plants, lawn, landscape, and turf area during certain hours prohibited by applicable laws or rules, during and up to 48 hours after measurable rainfall (0.1" or more).
f. GSWC will promptly notify customers when aware of leaks within the customer's control; the failure to repair any leaks, breaks, or other malfunction resulting in water waste in a customer's domestic or outdoor water system within forty-eight (48) hours of notification by the utility, unless other, specific arrangements are made with and agreed to by the utility.
g. The serving of water, other than upon request, in eating and drinking establishments, including but not limited to restaurants, hotels, cafes, bars, or other public places where food or drink are served and/or purchased. (L)

(Continued)

Schedule No. 14.1
Water Shortage Contingency Plan (T)
With Staged Mandatory Restrictions, Reductions And Drought Surcharges (T)

C. MANDATORY RESTRICTIONS (Continued)

h. Hotels/motels must provide guests with the option of choosing not to have towels and linens laundered daily and prominently display notice of this option. (L)
i. The use of potable water for irrigation of ornamental turf on public street medians.
j. The use of potable water for irrigation outside of newly constructed homes and buildings that is not delivered by drip or micro spray systems.
k. Commercial, industrial, and institutional properties, such as campuses, golf courses, and cemeteries, shall immediately implement water efficiency measures to reduce potable water use in an amount consistent with the mandated reduction.
l. Further reduction in or the complete prohibition of any other use of water declared non-essential, unauthorized, prohibited, or unlawful by an authorized government or regulatory agency or official.
m. Use of potable water for watering streets with trucks, or other vehicles, except for initial wash-down for construction purposes (if street sweeping is not feasible), or to protect the health and safety of the public.
n. The outdoor irrigation restriction does not apply to trees or edible vegetation watered solely by drip or micro spray systems.
o. The use of potable water is prohibited for the irrigation of non-functional turf at commercial, industrial and institutional sites. (N) (N)

D. WATER USE REDUCTIONS AND DROUGHT SURCHARGES (T)

A resolution was adopted on August 2, 2021, by the Board of Directors (Board) of American States Water Company, the parent company of GSWC, in response to drought or water supply shortage conditions. As such, GSWC will implement the appropriate Stage of its Water-Use Reduction Plan to either mitigate the water supply shortage in accordance with the Water Shortage Contingency Plan (WSCP) or to achieve identified water usage goals established by an authorized government agency or official, or as directed under court jurisdiction. The required actions outlined for each stage cannot be implemented until GSWC has filed a Tier 2 Advice Letter with the CPUC and CPUC approval has been obtained. (T)

Response actions for each of the six stages of GSWC's WSCP are as follows:

Stage 1 – Stage 1 is a "Water Alert" where voluntary conservation is encouraged. GSWC explains the drought situation to the public and governmental bodies relying on GSWC water. GSWC explains the potential subsequent water shortage stages in order to forecast possible future actions for the customer base. Under Stage 1, GSWC takes the following actions:

- Implement Voluntary Water Conservation Measures authorized under Rule No. 14.1.
- Establish a voluntary demand reduction target for each water system. (L)

(Continued)

Schedule No. 14.1
Water Shortage Contingency Plan (T)
With Staged Mandatory Restrictions, Reductions And Drought Surcharges (T)

D. WATER USE REDUCTIONS AND DROUGHT SURCHARGES (Continued) (L)

Stage 1 (Continued)

- Inform public of water shortage conditions or demand reduction targets through some or all of the following: distribution of literature, public meetings, website updates, bill inserts, digital media, conservation messages printed in local newspapers, and educational programs in schools.
- Initiate a Conservation Hotline, a toll-free number with trained Conservation Representatives to answer customer questions about conservation and water-use efficiency.
- Identify the year to be used for establishing the customer baseline water use.
- Recommend voluntary customer outdoor irrigation between the hours of 7 PM and 8 AM per the following Schedule (If a city, county, or other public agency adopts restrictions on the number of days or hours of the day that customers may irrigate, GSWC, at its discretion, may adopt and enforce those restrictions): (T) (T) (T)

Addresses Ending In:	Watering Days
Even Numbers (0, 2, 4, 6, 8)	Sunday, Wednesday, Friday
Odd Numbers (1, 3, 5, 7, 9)	Tuesday, Thursday, Saturday

Stage 2 – 20% Mandatory Reduction Stage: Stage 2 is a "Moderate Shortage" and will be implemented if the Stage 1 restrictions are deemed insufficient to achieve necessary demand reductions due to water supply shortages or to achieve identified water usage goals established by an authorized government agency or official. Stage 2 will include all actions undertaken in Stage 1. GSWC will require mandatory conservation under this stage. Under Stage 2, GSWC takes the following actions:

- All measures implemented in Stage 1 are implemented in Stage 2.
- Outdoor Irrigation is restricted to between the hours of 7 PM and 8 AM per the following schedule (If a city, county, or other public agency adopts restrictions on the number of days or hours of the day that customers may irrigate, GSWC, at its discretion, may adopt and enforce those restrictions): (T) (T) (T)

Addresses Ending In:	Watering Days
Even Numbers (0, 2, 4, 6, 8)	Sunday and Wednesday
Odd Numbers (1, 3, 5, 7, 9)	Tuesday and Saturday

- GSWC calculates customer conservation allocation based upon the year identified in Stage 1, less 20%. (L)

(Continued)

Schedule No. 14.1
Water Shortage Contingency Plan (T)
With Staged Mandatory Restrictions, Reductions And Drought Surcharges (T)

D. WATER USE REDUCTIONS AND DROUGHT SURCHARGES (Continued)

Stage 2 (Continued) (L)

- For residential customers no allocation will be set less than eight (8) Ccf per monthly billing period or 16 Ccf per bi-monthly billing period, unless directed otherwise by an authorized government agency. (T)

- Water Usage in excess of customer baseline may be charged at regular rate plus a drought emergency surcharge of up to $2.50 per Ccf. (T) (T)

- Installation of a flow restrictor for repeated violation of water use restrictions under Rule No. 14.1, C.3., as noted in Section C. of this Schedule. (T)

Stage 3 – 30% Mandatory Reduction Stage: Stage 3 is a "Severe Shortage" and will be implemented if the Stage 2 restrictions are deemed insufficient to achieve necessary demand reductions due to water supply shortages or to achieve identified water usage goals established by an authorized government agency or official. Stage 3 will include all actions undertaken in Stage 2. GSWC will require mandatory conservation under this stage. Under Stage 3, GSWC takes the following actions:

- All measures implemented in Stage 2 are implemented in Stage 3.

- GSWC calculates customer conservation allocation based upon the year identified in Stage 1, less 30%.

- For residential customers no allocation will be set less than eight (8) Ccf per monthly billing period or 16 Ccf per bi-monthly billing period, unless directed otherwise by an authorized government agency. (T)

- Water Usage in excess of customer baseline may be charged at regular rate plus a drought emergency surcharge of up to $5 per Ccf. (T) (T)

- Installation of a flow restrictor for repeated violation of water use restrictions under Rule 14.1 C.3., as noted in Section C. of this Schedule. (T)

Stage 4 - 40% Mandatory Reduction Stage: Stage 4 is a "Critical Shortage" and will be implemented if the Stage 3 restrictions are deemed insufficient to achieve necessary demand reductions due to water supply shortages or to achieve identified water usage goals established by an authorized government agency or official. Stage 4 will include all actions undertaken in Stage 3. GSWC will require mandatory conservation under this stage. Under Stage 4, GSWC takes the following actions:

- All measures implemented in Stage 3 are implemented in Stage 4.

- GSWC calculates customer conservation allocation based upon the year identified in Stage 1, less 40%.

- For residential customers no allocation will be set less than eight (8) Ccf per monthly billing period or 16 Ccf per bi-monthly billing period, unless directed otherwise by an authorized government agency. (T) (L)

(Continued)

Schedule No. 14.1
Water Shortage Contingency Plan (T)
With Staged Mandatory Restrictions, Reductions And Drought Surcharges (T)

D. WATER USE REDUCTIONS AND DROUGHT SURCHARGES (Continued)

Stage 4 (Continued) (L)

- Water Usage in excess of customer baseline may be charged at regular rate plus a drought emergency surcharge of up to $7.50 per Ccf. (T)
- Installation of a flow restrictor for repeated violation of water use restrictions under Rule No. 14.1 C.3., as noted in Section C. of this Schedule. (T)

Stage 5 - 50% Mandatory Reduction Stage: Stage 5 is a "Shortage Crisis" and will be implemented if the Stage 4 restrictions are deemed insufficient to achieve necessary demand reductions due to water supply shortages or to achieve identified water usage goals established by an authorized government agency or official. Stage 5 will include all actions undertaken in Stage 4. GSWC will require mandatory conservation under this stage. Under Stage 5, GSWC takes the following actions:

- All measures implemented in Stage 4 are implemented in Stage 5.
- GSWC calculates customer conservation allocation based upon the year identified in Stage 1, less 50%.
- For residential customer no allocation will be set less than eight (8) Ccf per monthly billing period or 16 Ccf per bi-monthly billing period, unless directed otherwise by an authorized government agency. (T)
- Water Usage in excess of customer baseline to be charged at regular rate plus a drought emergency surcharge of up to $10 per Ccf. (T)
- Installation of a flow restrictor for repeated violation of water use restrictions under Rule No. 14.1 C.3., as noted in Section C. of this Schedule. (T)

Stage 6 - 55% Mandatory Reduction Stage: Stage 6 is an "Emergency Shortage" and will be implemented if the Stage 5 restrictions are deemed insufficient to achieve necessary demand reductions due to water supply shortages or to achieve identified water usage goals established by an authorized government agency or official. Stage 6 will include all actions undertaken in Stage 5. GSWC will require mandatory conservation under this stage. Under Stage 6, GSWC takes the following actions:

- All measures implemented in Stage 5 are implemented in Stage 6.
- GSWC calculates customer conservation allocation based upon the year identified in Stage 1, less 55%. (L)

(Continued)

Schedule No. 14.1
Water Shortage Contingency Plan (T)
With Staged Mandatory Restrictions, Reductions And Drought Surcharges (T)

D. WATER USE REDUCTIONS AND DROUGHT SURCHARGES (Continued)

Stage 6 (Continued) (L)

- For residential customers no allocation will be set less than eight (8) Ccf per monthly billing period or 16 Ccf per bi-monthly billing period, unless directed otherwise by an authorized government agency. (T)

- Water Usage in excess of customer baseline to be charged at regular rate plus a drought emergency surcharge of up to $15 per Ccf. (T)

- Installation of a flow restrictor for repeated violation of water use restrictions under Rule No. 14.1 C.3., as noted in Section C. of this Schedule. (T)

E. DROUGHT SURCHARGES (N)

Excess usage above the baseline drought allocation may result in a Drought Surcharge. The Drought Surcharge is in addition to the base charges allowed under the applicable tariffs authorized by the CPUC.

Customers participating in the Utility's Low Income Customer Assistance Program shall be entitled to a 50% reduction in the Drought Surcharge. (N)

F. FLOW RESTRICTOR CHARGES (T)

The charge for installation and removal of a flow-restricting device shall be:

Connection Size	Charges
5/8″ to 1″	$150
1-1/2″ to 2″	$200
3″ and larger	$300

The flow restrictor will remain installed for a minimum of seven (7) days.

G. EXEMPTION AND APPEALS PROCESS (T)

Any customer who seeks a variance from any of the provisions of this voluntary water conservation plan and/or mandatory conservation plan shall notify the utility in writing, explaining in detail the reason for such a variation. The utility shall respond to each such request in writing.

The appeals form is available online at GSWC website: www.gswater.com/appeal or by calling GSWC's 24-Hour Customer Service Hotline at 1-800-999-4033. (L)

Schedule No. 14.1
Water Shortage Contingency Plan
With Staged Mandatory Restrictions, Reductions And Drought Surcharges

H. SPECIAL CONDITIONS

1. A Tier 2 advice letter will have to be filed with the CPUC to activate any of the Stages of Water Use Reduction and Drought Emergency Surcharges listed in this Schedule.

2. The active Stage of Water Use Reduction and Drought Emergency Surcharges is to remain in effect until a Tier 2 advice letter is filed with the CPUC to activate a different Stage or when Schedule No. 14.1 is deactivated.

3. Water-use violation fines and/or Drought Emergency Surcharges must be separately identified on each bill.

4. All bills are subject to reimbursement fee set forth on Schedule No. UF.

5. All revenue collected by the utility through water use violation fines and/or Drought Emergency Surcharges shall not be accounted for as income, but shall be accumulated in the General Ratemaking Area Balancing Account (GRABA). (T)

(Continued)

SCHEDULE 14.1-CM

STAGED MANDATORY CONSERVATION AND RATIONING

(N)

A. APPLICABILITY

This schedule applies to all water customers in the Claremont Customer Service Area (CM CSA) served under Tariff Schedule R3-1-R, R3-1-NR, R3-CMH-3M, and R3-CM-7ML. This schedule is only effective in times of mandatory rationing, as required by Rule No. 14.1, and only for the period noted in the Special Conditions section below. The drought emergency surcharges listed in this schedule are in addition to the regular water use charges under the current Schedules referenced above as authorized by the Commission.

B. TERRITORY

This schedule is applicable to customers in Claremont Customer Service Area only.

C. MANDATORY WATER USE REDUCTION AND DROUGHT EMERGENCY SURCHARGES

In response to the Governor's Executive Order (B-29-15) the State Water Resources Control Board (Water Board) imposed restrictions to achieve a statewide 25% reduction in potable urban water usage through February 28, 2016. These restrictions will require water consumers to reduce usage as compared to the amount they used in 2013. Golden State Water Company (GSWC) consumers reduced usage in 2014, but will need to achieve additional water conservation in 2015-16 to achieve the statewide goal.

These restrictions are designed to strongly encourage those customers with high per capita usage to achieve proportionally greater reduction than those with low use. The annual mandated reduction for this area is 32%. The following stages will be implemented as needed to achieve the annual mandated reduction. The utility may implement Stage 2 and the associated Drought Emergency Surcharge without first implementing Stage 1 if warranted by the mandated reduction.

(N)

(Continued)

SCHEDULE 14.1-CM

STAGED MANDATORY CONSERVATION AND RATIONING

(N)

Stage 1

Outdoor irrigation is restricted to two days per week:

Addresses Ending In:	Watering Days
Even Numbers (0, 2, 4, 6, 8)	Monday and Thursday
Odd Numbers (1, 3, 5, 7, 9)	Tuesday and Friday

Additional restrictions:

All outdoor irrigation must occur between the hours of 9 am or after 5 pm.

Failure to comply with these restrictions may result in the installation of a flow restrictor device along with associated fees for installation and removal.

If conditions warrant, GSWC will change the number of watering days and the specific day of watering after first notifying its customers in accordance with Rule 14.1.

Stage 2

Will be implemented if the Stage 1 restrictions are deemed insufficient to achieve reductions due to water supply shortages or to achieve identified water usage goals established by an authorized government agency or official.

In addition to the restrictions identified in Stage 1, the following allocations and drought emergency surcharges are in effect:

1. All customers will have their baseline established using the 2013 usage data for their premise or an area wide average baseline for similar usage if 2013 data does not exist (e.g. new customer accounts).
2. The customer's allocation will be based on the 2013 baseline less 32%.
3. No allocation will be set less than eight (8) Ccf per monthly billing period or sixteen (16) Ccf per bi-monthly billing period.
4. All usage in excess of the customer's allocation will be charged at the regular rate plus a drought emergency surcharge of $2.50 per ccf.

(N)

(Continued)

SCHEDULE 14.1-CM

STAGED MANDATORY CONSERVATION AND RATIONING

Stage 3
Will be implemented if the Stage 2 allocations and drought emergency surcharges are deemed insufficient to achieve reductions due to water supply shortages or to achieve identified water usage goals established by an authorized government agency or official. (N)

In addition to the restrictions identified in Stage 1, the following allocations are in effect:

1. All customers will have their baseline established using the 2013 usage data for their premise or an area wide average baseline for similar usage if 2013 data does not exist (e.g. new customer accounts).
2. The customer's allocation will be based on the 2013 baseline less 32%.
3. No allocation will be set less than eight (8) Ccf per monthly billing period or sixteen (16) Ccf per bi-monthly billing period.
4. All usage in excess of the customer's allocation will be charged at the regular rate plus a drought emergency surcharge of $5.00 per ccf.

Stage 4
Will be implemented if the Stage 3 allocations and drought emergency surcharges are deemed insufficient to achieve reductions due to water supply shortages or to achieve identified water usage goals established by an authorized government agency or official.

In addition to the restrictions identified in Stage 1, the following allocations are in effect:

1. All customers will have their baseline established using the 2013 usage data for their premise or an area wide average baseline for similar usage if 2013 data does not exist (e.g. new customer accounts).
2. The customer's allocation will be based on the 2013 baseline less 32%.
3. No allocation will be set less than eight (8) Ccf per monthly billing period or sixteen (16) Ccf per bi-monthly billing period.
4. All usage in excess of the customer's allocation will be charged at the regular rate plus a drought emergency surcharge of $10.00 per ccf.

(N)

(Continued)

SCHEDULE 14.1-CM

STAGED MANDATORY CONSERVATION AND RATIONING

(N)

D. FLOW RESTRICTOR CHARGES

The charge for installation and removal of a flow-restricting device shall be:

Connection Size	Charges
5/8" to 1"	$150.00
1-1/2" to 2"	$200.00
3" and larger	$300.00

The flow restrictor will remain installed for a minimum of 7 days.

E. EXEMPTION AND APPEALS PROCESS

Any customer who seeks a variance from any of the provisions of this voluntary water conservation and mandatory rationing plan shall notify the utility in writing, explaining in detail the reason for such a variation. The utility shall respond to each such request in writing.

The appeals form is available online at GSWC website: www.gswater.com/appeal, the Claremont CSA office located at 915 W. Foothill Blvd., Suite E, Claremont, CA or by calling 1-800-999-4033.

(N)

(Continued)

SCHEDULE 14.1-CM

STAGED MANDATORY CONSERVATION AND RATIONING

(N)

F. SPECIAL CONDITIONS

1. A Tier 2 advice letter will have to be filed with the Commission to activate any of the Stages of Mandatory Water Use Reduction and Drought Emergency Surcharges listed in this schedule.

2. The active Stage of Mandatory Water Use Reduction and Drought Emergency Surcharges is to remain in effect until a Tier 2 advice letter is filed with the Commission to activate a different Stage or when Schedule 14.1-CM is deactivated.

3. Water use violation fines and/or Drought Emergency Surcharges must be separately identified on each bill.

4. All bills are subject to reimbursement fee set forth on Schedule No. UF.

5. All monies collected by the utility through water use violation fines and/or Drought Emergency Surcharges shall not be accounted for as income, but shall be accumulated in the WRAM and lost revenue portion tracked in the Water Conservation Memorandum Account (WCMA) for non-WRAM tariffs.

6. No Customer shall use utility-supplied water for non-essential or unauthorized uses as defined below:

   a. The application of potable water to outdoor landscapes in a manner that causes runoff such that water flow onto adjacent property, non-irrigated areas, private and public walkways, roadways, parking lots, or structures.
   b. The use of a hose that dispenses potable water to wash a motor vehicle, except where the hose is fitted with a shut-off nozzle or device attached to it that causes it to cease dispensing water immediately when not in use.

(N)

(Continued)

SCHEDULE 14.1-CM

STAGED MANDATORY CONSERVATION AND RATIONING

(N)

c. The use of potable water for washing buildings, structures, sidewalks, walkways, patios, tennis courts, or other hard-surfaced, non-porous areas.
d. The use of potable water in a fountain or other decorative water feature, except where the water is part of a recirculating system.
e. The use of potable water for watering outside plants, lawn, landscape, and turf area during certain hours prohibited by applicable laws, during and up to 48 hours after measurable rainfall (0.1" or more).
f. GSWC will promptly notify customers when aware of leaks within the customer's control; the failure to repair any leaks, breaks, or other malfunction resulting in water waste in a customer's domestic or outdoor water system within forty-eight (48) hours of notification by the utility, unless other, specific arrangements are made with and agreed to by the utility.
g. The serving of water, other than upon request, in eating and drinking establishments, including but not limited to restaurants, hotels, cafes, bars, or other public places where food or drink are served and/or purchased.
h. Hotels/motels must provide guests with the option of choosing not to have towels and linens laundered daily and prominently display notice of this option.
i. The use of potable water for irrigation of ornamental turf on public street medians.
j. The use of potable water for irrigation outside of newly constructed homes and buildings that is not delivered by drip or micro spray systems.
k. Commercial, industrial, and institutional properties, such as campuses, golf courses, and cemeteries, immediately implement water efficiency measures to reduce potable water use in an amount consistent with the mandated reduction.
l. Further Reduction in or the complete prohibition of any other use of water declared non-essential, unauthorized, prohibited, or unlawful by an authorized government or regulatory agency or official.
m. Use of potable water for watering streets with trucks, or other vehicles, except for initial wash-down for construction purposes (if street sweeping is not feasible), or to protect the health and safety of the public.

7. The outdoor irrigation restriction does not apply to trees or edible vegetation watered solely by drip or microspray systems.

(N)

Rule No. 20

WATER CONSERVATION

A. Purpose
The purpose of this rule is to ensure that water resources available to the utility are put to a reasonable beneficial use and that the benefits of the utility's water water supply and service extend to the largest number of persons.

B. Waste of Water Discouraged
Refer to Rule 11 B. (3).

C. Use of Water-Saving Devices and Practices
Each customer of the utility is encouraged to install water saving devices to reduce the quantity of water used within the residence. Each customer is further encouraged to adopt such other water usage and re-usage practices and procedures as are feasible and reasonable. (T) (T)

D. Water-Saving Kits
The utility will make available, without initial cost to the customer, for use in each residence receiving water service from the utility, a water-saving kit containing the following:

(D)

(1) A device or devices for reducing faucet and shower flow rates; (T)

(2) A dye tablet or tablets for determining if a toilet tank leaks;

(3) Other devices and programs from time to time approved by the utility; (T)

(4) Installation and other instructions and information pertinent to conserving water. (T)

ORDINANCE NO. 2009-10

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF CLAREMONT, CALIFORNIA, AMENDING TITLE 8 OF THE CLAREMONT MUNICIPAL CODE ADDING A NEW CHAPTER 8.30 TO ESTABLISH A WATER CONSERVATION AND WATER SUPPLY SHORTAGE PROGRAM AND REGULATIONS

WHEREAS, the City has established policies of sustainability and addressed these issues as part of the City's General Plan; and

WHEREAS, as set forth in the Open Space, Parkland, Conservation, and Air Quality Element of the General Plan, the City encourages sustainable practices including achieving the highest level of water conservation possible; and

WHEREAS, as set forth in the Claremont Sustainable City Plan which was adopted by the City Council in October 2008 and calls for the City to adopt a water conservation ordinance and work to reduce the water consumption in our City to sustainable levels; and

WHEREAS, a reliable minimum supply of potable water is essential to the public health, safety and welfare of the people and economy of the southern California region; and

WHEREAS, Southern California is a semi-arid region that is largely dependent upon imported water supplies. A growing population, climate change, environmental concerns, and other factors in other parts of the State and western United States make the region highly susceptible to water supply reliability issues; and

WHEREAS, from time to time drought conditions in the state of California have resulted in reduced supplies of imported water and/or local groundwater; and

WHEREAS, careful water management that includes active water conservation measures not only in times of drought, but at all times, is essential to ensure a reliable minimum supply of water to meet current and future water supply needs; and

WHEREAS, Article XI, Section 7 of the California Constitution declares that a city or county may make and enforce within its limits all local, police, sanitary, and other ordinances and regulations not in conflict with general laws; and

WHEREAS, Golden State Water Company, the privately-owned retail water provider for the City of Claremont, has requested the City's assistance in enforcing water conservation restrictions even in times when mandatory water conservation measures are not in effect in the City; and

WHEREAS, The City of Claremont will work with partners to improve the water efficiency and drought tolerance of municipal landscaping.

WHEREAS, on May 12, 2009, the City Council studied potential water conservation measures and provided direction to staff as to what regulations were appropriate for Claremont; and

WHEREAS, on June 11, 2009, the Community Services Commission of the City of Claremont held a duly noticed public hearing on this Ordinance, at which time all persons wishing to testify in connection with this Ordinance were heard, and after considering all public comments recommended that the City Council adopt this Ordinance; and

WHEREAS, on July 28, 2009, the City Council of the City of Claremont held a duly noticed public hearing at which time all persons wishing to testify in connection with this Ordinance were heard; and

WHEREAS, after considering all public comments, the City Council determined that this Ordinance is in the best interest of the City; and

WHEREAS, the adoption of this Ordinance is exempt from the California Environmental Quality Act (CEQA) pursuant to Sections 15307 and 15308 of the CEQA Guidelines as these sections exempt actions taken by regulatory agencies for the protection of natural resources and/or the environment; and

WHEREAS, this Ordinance is in the best interest of the City for the following reasons:

(a) The provisions contained in this Ordinance are necessary for the health, safety, and general welfare of the community.

(b) The water conservation regulations in this Ordinance are consistent with the General Plan and further the implementation of the General Plan.

(c) The water conservation regulations in this ordinance promote the following goals and policies of the City.

General Plan Goal 5-15: Achieve the highest level of water conservation possible.

General Plan Policy 5-15.2: Educate the public about the importance of water conservation and avoiding wasteful water habits.

General Plan Policy 5-15.3: Work with the City water provider in exploring water conservation programs, and encourage the water provider to offer incentives for water conservation.

Claremont Sustainable City Plan Goal 1.2: Minimize waste of water resources by advocating and implementing wise use and conservation measures.

(d) This ordinance satisfies Action 1.2.6 of the Claremont Sustainable City Plan, which calls for adoption of a water efficiency ordinance.

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF CLAREMONT DOES ORDAIN AS FOLLOWS:

SECTION 1. Title 8 of the Claremont Municipal Code of the City of Claremont, is hereby amended to add a new chapter 8.30 to read as follows:

"Chapter 8.30

Water Conservation

Sections:

8.30.010 Purpose
8.30.020 Definitions
8.30.030 Application
8.30.040 Permanent Water Conservation Requirements
8.30.050 Level 1 Water Supply Shortage
8.30.060 Level 2 Water Supply Shortage
8.30.070 Level 3 Water Supply Shortage – Emergency Condition
8.30.080 Procedures for Determination/Notification of Water Supply Shortage
8.30.090 Hardship Waiver
8.30.100 Penalties and Violations

8.30.010 PURPOSE

The purpose of this Chapter is to establish a water conservation and supply shortage program that will reduce water consumption within the City of Claremont through conservation, assist in effective water supply planning, assure reasonable and beneficial use of water, prevent waste of water, and maximize the efficient use of water within the City to avoid and minimize the effect and hardship of water shortages to the greatest extent possible.

This chapter establishes water conservation restrictions intended to alter behavior related to water use efficiency at all times and further establishes three levels of water supply shortage response actions to be implemented during times of declared water shortage or declared water shortage emergency, with increasing restrictions on water use in response to worsening drought or emergency conditions and decreasing supplies.

8.30.020 DEFINITIONS

The following definitions shall apply to this Chapter:

1. **"Person"** means any natural person or persons, corporation, public or private entity, governmental agency or institution, or any other user of water in the City of Claremont.

2. **"Landscape irrigation system"** means an irrigation system with pipes, hoses, spray heads, or sprinkling devices that are operated by hand or through an automated system.

3. **"Large landscape areas"** means a lawn, landscape, or other vegetated area, or combination thereof, equal to more than one (1) acre of irrigable land.

4. **"Lawn, landscape or other vegetated area"** means any plant material.

5. **"Local Retail Water Agency"** means any agency or privately-owned company that provides water to residents, businesses and other water users in the City of Claremont.

6. **"Single pass cooling systems"** means equipment where water is circulated only once to cool equipment before being disposed.

7. **"Potable water"** means water which is suitable for drinking.

8. **"Recycled water"** means the reclamation and reuse of non-potable water for beneficial use as defined in Title 22 of the California Code of Regulations.

8.30.030. Application

a. The provisions of this chapter apply to any person in the use of any potable water in the City.

b. The provisions of this chapter do not apply to uses of water necessary to protect public health and safety or for essential government services, such as police, fire and other similar emergency services.

c. The provisions of this chapter do not apply to the use of recycled water, with the exception of Section 8.30.040(a).

d. The provisions of this chapter do not apply to the use of water by commercial nurseries and commercial growers to sustain plants, trees, shrubs, crops or other vegetation intended for commercial sale.

e. This chapter is intended solely to further the conservation of water. It is not intended to implement any provision of federal, state, or local statutes, ordinances, or regulations relating to protection of water quality or control of drainage or runoff.

f. Where any provision of the Claremont Municipal Code is in conflict with this chapter, the provision of this Chapter shall take precedence.

8.30.040: Permanent Water Conservation Requirements

The following water conservation requirements are effective at all times. Any person who violates this section shall be subject to the penalties for violation as set forth in Section 8.30.100 and this Code.

a. **Limits on Watering Hours**: Outdoor watering or irrigating of lawn, landscape or any other vegetated area with potable water is prohibited between the hours of 9 a.m. and 5 p.m. Pacific Standard Time (PST) on any day, except by use of a hand-held bucket or similar container, a hand-held hose equipped with a positive self-closing water shut-off nozzle or device, or for very short periods of time for the express purpose of adjusting or repairing an irrigation system. This subsection does not apply to landscape irrigation systems that exclusively use very low-flow drip type irrigation systems when no emitter produces more than two (2) gallons of water per hour.

b. **Limit on Watering Duration**: Watering or irrigating of lawn, landscape or other vegetated area with potable water using a landscape irrigation system or a watering device that is not continuously attended is limited to no more than fifteen (15) minutes watering per day per station. This subsection does not apply to landscape irrigation systems that exclusively use very low-flow drip type irrigation systems when no emitter produces more than two (2) gallons of water per hour and weather based controllers or stream rotor sprinklers that meet a 70% efficiency standard.

c. **No Excessive Water Flow or Runoff:** Watering or irrigating of any lawn, landscape or other vegetated area in a manner that causes or allows excessive water flow or runoff onto an adjoining sidewalk, driveway, street, alley, gutter or ditch is prohibited.

d. **No Washing Down Hard or Paved Surfaces:** Washing down hard or paved surfaces, including but not limited to sidewalks, walkways, driveways, parking areas, tennis courts, patios or alleys is prohibited, except when necessary to alleviate safety or sanitary hazards, and then only by use of a hand-held bucket or similar container, a hand-held hose equipped with a positive self-closing water shut-off device, a low-volume, high-pressure cleaning machine equipped to recycle any water used, or a low-volume high-pressure water broom.

e. **Obligation to Fix Leaks, Breaks or Malfunctions:** Excessive use, loss or escape of water through breaks, leaks or other malfunctions in the water user's plumbing or distribution system for any period of time after such escape of water should have reasonably been discovered and corrected and in no event more

than five (5) business days of the property owner receiving notice from Local Retail Water Agency or the City of Claremont, is prohibited.

f. **Re-circulating Water Required for Water Fountains and Decorative Water Features**: Operating a water fountain or other decorative water feature that does not use re-circulated water is prohibited.

g. **Limits on Washing Vehicles:** Using water to wash or clean a vehicle, including but not limited to any automobile, truck, van, bus, motorcycle, boat or trailer, whether motorized or not is prohibited, except by use of a hand-held bucket or similar container or a hand-held hose equipped with a positive self-closing water shut-off nozzle or device. This subsection does not apply to any commercial car washing facility.

h. **Drinking Water Served Upon Request Only:** Eating or drinking establishments, including but not limited to a restaurant, hotel, cafe, cafeteria, bar, or other public place where food or drinks are sold, served, or offered for sale, are prohibited from providing drinking water to any person unless expressly requested.

i. **Commercial Lodging Establishments Must Provide Guests Option to Decline Daily Linen Services**: Hotels, motels and other commercial lodging establishments must provide customers the option of not having towels and linen laundered daily. Commercial lodging establishments must prominently display notice of this option in each bathroom using clear and easily understood language.

j. **No Installation of Single Pass Cooling Systems**: Installation of single pass cooling systems is prohibited in buildings requesting new water service.

k. **No Installation of Non-recirculating Commercial Car Wash and Laundry Systems:** Installation of non-recirculating water systems is prohibited in new commercial conveyor car wash and new commercial laundry systems.

l. **Restaurants Required to Use Water Conserving Dish Wash Spray Valves**: Food preparation establishments, such as restaurants or cafes, are prohibited from using non-water conserving dish wash spray valves.

8.30.050: Level 1 Water Supply Shortage

a. Upon the declaration by the city manager of a Level 1 Water Supply Shortage condition, the City will implement the mandatory Level 1 conservation measures identified in this section. Following the City Manager's declaration, he or she shall agendize before the City Council an item for the council to affirm the declaration.

Generally, a Level 1 Water Supply Shortage is warranted when a reduction in consumer demand of up to 10 percent is needed to respond to existing water conditions. Conditions to be considered by the city manager and City Council in declaring a water supply shortage include, but are not limited to: time of year, local rainfall totals, regional/subregional water district's Water Supply Allocation Plans, groundwater use programs, State Water Project allocations or anticipated allocations, local or regional water system emergencies, or natural disasters that cause damage to water supplies or water distribution system.

b. **Additional Water Conservation Measures:** In addition to the prohibited uses of water identified in Section 8.30.40, the following water conservation requirements apply during a declared Level 1 Water Supply Shortage. Any person in violation of this Subsection shall be subject to the penalties for violation as set forth in Section 8.30.100 and this Code.

1. **Limits on Watering Days:** Watering or irrigating of lawn, landscape or other vegetated area with potable water is limited to three (3) days per week on a schedule established and posted by the City of Claremont. During the months of November through March, watering or irrigating of lawn, landscape or other vegetated area with potable water is limited to no more than one day per week on a schedule established and posted by the City of Claremont. This provision does not apply to landscape irrigation zones that exclusively use very low flow drip type irrigation systems when no emitter produces more than two (2) gallons of water per hour. This provision also does not apply to watering or irrigating by use of a hand-held bucket or similar container, a hand-held hose equipped with a positive self-closing water shut-off nozzle or device, or for very short periods of time for the express purpose of adjusting or repairing an irrigation system.

2. **Obligation to Fix Leaks, Breaks or Malfunctions**: All leaks, breaks, or other malfunctions in the water user's plumbing or distribution system must be repaired within seventy-two (72) hours of notification of the property owner by the City of Claremont or a Local Retail Water Agency unless other arrangements are made with the City or Local Retail Water Agency.

8.30.060. Level 2 Water Supply Shortage

a. Upon the declaration by the city manager of a Level 2 Water Supply Shortage condition, the City will implement the mandatory Level 2 conservation measures identified in this section. Following the city manager's declaration, he or she shall agendize before the City Council an item for the council to affirm the declaration. Generally, a Level 2 Water Supply Shortage is warranted when a reduction in consumer demand of 11 to 30 percent is needed to respond to existing water conditions.

b. **Additional Conservation Measures:** In addition to the prohibited uses of water identified in Section 8.30.040 and 8.30.050, the following additional water conservation requirements apply during a declared Level 2 Water Supply Shortage.

1. **Watering Days:** Watering or irrigating of lawn, landscape or other vegetated area with potable water is limited to two (2) days per week on a schedule established and posted by the City of Claremont. During the months of November through March, watering or irrigating of lawn, landscape or other vegetated area with potable water is limited to no more than one day per week on a schedule established and posted by the City of Claremont. This provision does not apply to landscape irrigation zones that exclusively use very low flow drip type irrigation systems when no emitter produces more than two (2) gallons of water per hour. This provision also does not apply to watering or irrigating by use of a hand-held bucket or similar container, a hand-held hose equipped with a positive self-closing water shut-off nozzle or device, or for very short periods of time for the express purpose of adjusting or repairing an irrigation system.

2. **Obligation to Fix Leaks, Breaks or Malfunctions**: All leaks, breaks, or other malfunctions in the water user's plumbing or distribution system must be repaired within forty-eight (48) hours of notification of the property owner by the City of Claremont or the Local Retail Water Agency unless other arrangements are made with the either the City or Local Retail Water Agency.

3. **Limits on Filling Ornamental Lakes or Ponds**: Filling or re-filling ornamental lakes or ponds is prohibited, except to the extent needed to sustain aquatic life, provided that such animals are of significant value and have been actively managed within the water feature prior to declaration of a supply shortage level under this ordinance.

4. **Limits on Washing Vehicles:** Using water to wash or clean a vehicle, including but not limited to, any automobile, truck, van, bus, motorcycle, boat or trailer, whether motorized or not, is prohibited except by use of a hand-held bucket or similar container, a hand-held hose equipped with a positive self-closing water shut-off nozzle or device, by high pressure/low volume wash systems, or at a commercial car washing facility that utilizes a re-circulating water system to capture or reuse water.

5. **Limits on Filling Residential Swimming Pools & Spas:** Re-filling of more than one foot and initial filling of residential swimming pools or outdoor spas with potable water is prohibited.

8.30.070. Level 3 Water Supply Shortage Emergency

a. A Level 3 Water Supply Shortage condition is also referred to as an "Emergency" condition. A Level 3 condition exists when the city manager declares a water shortage emergency and notifies its residents and businesses that a significant reduction in consumer demand is necessary to maintain sufficient water supplies for public health and safety. Upon the declaration of a Level 3 Water Supply Shortage condition, the City will implement the mandatory Level 3 conservation measures identified in this section. Following the city manager's declaration, he or she shall agendize before the City Council an item for the council to affirm the declaration. Generally, a Level 3 Water Supply Emergency is warranted when a reduction in consumer demand of more than 30 percent is needed to respond to existing water conditions.

b. **Additional Conservation Measures:** In addition to the prohibited uses of water identified in Section 8.30.040, 8.30.050 and 8.30.060, the following water conservation requirements apply during a declared Level 3 Water Supply Shortage Emergency.

1. **No Watering or Irrigating:** Watering or irrigating of lawn, landscape or other vegetated area with potable water is prohibited. This restriction does not apply to the following categories of use, unless the City has determined that recycled water is available and may be applied to the use:

   i. Maintenance of vegetation, including trees and shrubs, that are watered using a hand-held bucket or similar container, hand-held hose equipped with a positive self–closing water shut-off nozzle or device;

   ii. Maintenance of existing landscape necessary for fire protection;

   iii. Maintenance of existing landscape for soil erosion control;

   iv. Maintenance of plant materials identified to be rare or essential to the well-being of protected species;

   v. Maintenance of landscape within active public parks and playing fields, day care centers, golf course greens, and school grounds, provided that such irrigation does not exceed two (2) days per week according to the schedule established in Section 8.30.060 (b)(1) and time restrictions in Section 8.30.040 (a) and (b);

   vi. Actively irrigated environmental mitigation projects.

2. **Obligation to Fix Leaks, Breaks or Malfunctions**: All leaks, breaks, or other malfunctions in any plumbing or water distribution system must be repaired within twenty four (24) hours of notification of the property owner

by the City or Local Retail Water Agency unless other arrangements are made with the City or Local Retail Water Agency.

8.30.080. Procedures for Determination/Notification of Water Supply Shortage

a. **Declaration and Notification of Water Supply Shortage:** The existence of Level 1, Level 2 or Level 3 Water Supply Shortage conditions may be declared by the city manager and affirmed by resolution of the City Council adopted at a regular or special public meeting held in accordance with state law. The mandatory conservation requirements applicable to Level 1, Level 2 or Level 3 conditions will take effect ten (10) days after the date the shortage level is declared. Within five (5) days following the declaration of the shortage level, the City Council must publish a copy of the resolution in a newspaper used for publication of official notices.

b. **Declaration and Notification that a Water Supply Shortage Has Ended:** The City Council may declare an end to a water supply shortage situation upon recommendation from the city manager, or designee, by approval of a resolution at a regular or special public meeting of the City Council.

8.30.090. Hardship Waiver

a. **Undue and Disproportionate Hardship:** If, due to unique circumstances, a specific requirement of this chapter would result in undue hardship to a person using water or to property upon which water is used, that is disproportionate to the impacts to water users generally or to similar property or classes of water users, then the person may apply for a waiver to the requirements as provided in this section.

b. **Written Finding:** The waiver may be granted or conditionally granted only upon a written finding of the existence of facts demonstrating an undue hardship to a person using water or to property upon which water is used, that is disproportionate to the impacts to water users generally or to similar property or classes of water use due to specific and unique circumstances of the user or the user's property.

1. **Application**: Application for a waiver must be on a form prescribed by the City and accompanied by a non-refundable processing fee in an amount set by City Council resolution.

2. **Supporting Documentation**: The application must be accompanied by photographs, maps, drawings, and other information, including a written statement of the applicant.

3. **Required Findings for Waiver:** An application for a waiver will be denied unless the Community Development Director finds, based on the information provided in the application, supporting documents, or such

additional information as may be requested, and on water use information for the property as shown by the records of the Local Retail Water Agency or its Agent, all of the following:

i. That the waiver does not constitute a grant of special privilege inconsistent with the limitations upon other residents and businesses;

ii. That because of special circumstances applicable to the property or its use, the strict application of this chapter would have a disproportionate impact on the property or use that exceeds the impacts to residents and businesses generally;

iii. That the authorizing of such waiver will not be of substantial detriment to adjacent properties, and will not materially affect the ability of the City Council to effectuate the purpose of this chapter and will not be detrimental to the public interest; and

iv. That the condition or situation of the subject property or the intended use of the property for which the waiver is sought is not common, recurrent or general in nature.

4. **Approval Authority**: The city manager, or his designee, must act upon any completed application no later than ten (10) days after submittal and may approve, conditionally approve, or deny the waiver. The applicant requesting the waiver must be promptly notified in writing of any action taken. Unless specified otherwise at the time a waiver is approved, the waiver will apply to the subject property during the period of the mandatory water supply shortage condition. The decision of the city manager, or his designee, will be final.

8.30.100. Penalties and Violations

a. **Misdemeanor:** Any violation of this chapter may be prosecuted as a misdemeanor punishable by imprisonment in the county jail for not more than thirty (30) days, or by a fine not exceeding one thousand dollars ($1,000), or by both.

b. **Penalties:** Penalties for failure to comply with any provisions of the ordinance are as follows:

1. **First Violation:** The City may issue a written warning and deliver a copy of this ordinance by mail to a violator.

2. **Second Violation:** A second violation within the preceding twelve (12) calendar months is punishable by a fine not to exceed one hundred dollars ($100).

3. **Third Violation:** A third violation within the preceding twelve (12) calendar months is punishable by a fine not to exceed two hundred and fifty dollars ($250).

4. **Fourth and Subsequent Violations:** A fourth and any subsequent violation is punishable by a fine not to exceed five hundred dollars ($500).

c. **Separate Offenses**: Each day that a violation of this chapter occurs is a separate offense."

SECTION 2. Severability: If any section, subsection, sentence, clause or phrase in this chapter is for any reason held invalid, the validity of the remainder of the chapter will not be affected. The City Council hereby declares it would have passed this chapter and each section, subsection, sentence, clause or phrase thereof, irrespective of the fact that one or more sections, subsections, sentences, clauses, or phrases is declared invalid.

SECTION 3. The mayor shall sign this ordinance and the city clerk shall attest and certify to the passage and adoption of it, and within fifteen (15) days, publish in the Claremont Courier, a semi-weekly newspaper of general circulation, printed, published, and circulated in the City of Claremont and thirty (30) days thereafter it shall take effect and be in force.

PASSED, APPROVED, AND ADOPTED this 28th day of July, 2009.

Linda P. Elders
Mayor Pro Tem, City of Claremont

ATTEST:

Lynne E. Fryman
City Clerk, City of Claremont

APPROVED AS TO FORM:

Sonia R. Carvalho
City Attorney, City of Claremont

STATE OF CALIFORNIA)
COUNTY OF LOS ANGELES) ss.
CITY OF CLAREMONT)

I, Lynne Fryman, City Clerk of the City of Claremont, County of Los Angeles, State of California, hereby certify that the foregoing Ordinance No. 2009-10 was introduced at a regular meeting of said council held on the 14th day of July, 2009, that it was regularly passed and adopted by said city council, signed by the mayor pro tem, and attested by the city clerk of said city, all at a regular meeting of said council held on the 28th day of July, 2009, and that the same was passed and adopted by the following vote:

AYES:	COUNCILMEMBERS:	PEDROZA, YAO, ELDERKIN, SCHROEDER
NOES:	COUNCILMEMBERS:	MAYOR CALAYCAY
ABSTAINED:	COUNCILMEMBERS:	NONE
ABSENT:	COUNCILMEMBERS:	NONE

Executed this 28th day of July, 2009 at Claremont, California.

Lynne E. Fryman
City Clerk of the City of Claremont

RECORDING REQUESTED BY AND MAIL TO:

Claremont Courier
1420 N. Claremont Blvd.
Suite 205-B
Claremont, CA 91711
909-621-4761

This space is for the County Clerk's Filing Stamp

PROOF OF PUBLICATION
(2015.5 C.C.P)

STATE OF CALIFORNIA,
County of Los Angeles,

MAIL TO: _____

I am a citizen of the United States and a resident of the County aforesaid: I am over the age of eighteen years, and not a party to or interested in the above-entitled matter. I am the principal clerk of the printer of the

CLAREMONT COURIER

A newspaper of general circulation, printed and published **semi-weekly** in the City of **Claremont**, County of Los Angeles; and which newspaper has been adjudged a newspaper of general circulation by the Superior Court of Los Angeles, State of California, under the date of 9/17, 1908, Case Number C134; that the notice, of which the annexed is a printed copy (set in type not smaller than nonparell), has been published in each regular and entire issue of said newspaper and not in any supplement thereof on the following dates, to wit:

7/22

all in the year 2009

I certify (or declare) under penalty of perjury that the foregoing is true and correct.
Dated at Claremont, California,
this 22 day of July, 2009.

Sandy Kearns
Signature

Proof of Publication of

on BACK

SUMMARY OF ORDINANCE INTRODUCED AT THE REGULAR CLAREMONT CITY COUNCIL MEETING OF JULY 14, 2009

(Full text of this ordinance is on file in the office of the City Clerk)

SUMMARY OF ORDINANCE OF THE CITY COUNCIL OF THE CITY OF CLAREMONT, CALIFORNIA, ADDING A NEW CHAPTER TO TITLE 8 OF THE CLAREMONT MUNICIPAL CODE TO ESTABLISH A WATER CONSERVATION AND WATER SUPPLY SHORTAGE PROGRAM AND REGULATIONS

The purpose of the ordinance is to enable the City to enforce sensible water use habits in situations where water is clearly being wasted and to have a means for enforcing more stringent measures in times of severe water supply reductions.

The ordinance creates the following permanent limitations regarding water use in the City. The following limitations would be in effect at all times:

- No watering between the hours of 9 a.m. and 5 p.m.
- Watering duration is limited to (15) minutes watering per day per station
- No excessive water flow or runoff from outdoor watering
- No washing down hard or paved surfaces with water Obligation to fix leaks, breaks or malfunctions (within 5 business days of notice)
- Re-circulating water required for water fountains and decorative water features
- Wash vehicles only with a bucket or hose with shut off nozzle
- Restaurants only serve water upon request
- Hotels must provide guests option to decline daily linen laundering
- No installation of single-pass cooling systems
- No installation of non-recirculating commercial car wash and laundry systems
- Restaurants required to use water conserving dish wash spray valves

In addition to these permanent limitations, the ordinance includes three levels of increasingly stringent restrictions that could be implemented during times of serious drought or water emergencies. These additional restrictions are summarized in the table below:

Level 1 – Alert
(Up to 10% Reduction Needed)
All permanent restrictions plus:
Watering limited to 3 days per week
Fix leaks within 72 hours

Level 2 – Critical
(11% to 30% Reduction Needed)
All permanent restrictions plus:
Watering limited to 2 days per week
Fix leaks within 48 hours
No re-filling of ornamental lakes or ponds
Commercial car washes must be equipped with recirculating systems
Limited filling of residential pools and spas

Level 3 – Emergency
(Above 30 % Reduction Needed)
All permanent restrictions plus all Level 2 restrictions plus:
No watering or irrigating with certain exceptions
Fix leaks within 24 hours

The ordinance includes provisions for the granting of hardship waivers when required findings can be made. It also includes penalties that may be assessed for violations of the above described water use limits and restrictions.

Copies of the proposed ordinance are available for review at City Hall, 207 Harvard Avenue; the Claremont Public Library, 208 Harvard Avenue; and on the City of Claremont website, www.ci.claremont.ca.us. For more information, contact Senior Planner Christopher Veirs at (909) 399-5486.

Publish: July 22, 2009

ORDINANCE NO. 2010-02

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF CLAREMONT, CALIFORNIA, AMENDING TITLE 16 OF THE CLAREMONT MUNICIPAL CODE BY ADDING CHAPTER 16.131 REGARDING THE ADOPTION OF A WATER EFFICIENT LANDSCAPE ORDINANCE

WHEREAS, the City has established sustainability goals created policies to address these goals as part of the City's General Plan; and

WHEREAS, as set forth in the Open Space, Parkland, Conservation, and Air Quality Element of the General Plan, the City encourages sustainable practices, including achieving the highest level of water efficiency and conservation possible; and

WHEREAS, as the Claremont Sustainable City Plan, which was adopted by the City Council in October 2008, calls on the City to adopt a water conservation ordinance and work to reduce the water consumption within the City; and

WHEREAS, a reliable minimum supply of potable water is essential to the public health, safety and welfare of the people and economy of the southern California region; and

WHEREAS, it is estimated by the watermaster for the Claremont area that 70 percent of water consumed in Claremont is utilized outdoors for landscaping, pools and water features; and

WHEREAS, Southern California is a semi-arid region where factors including a growing population, climate change, environmental concerns, and an expected long-term decline in imported water supply necessitate a more appropriate form of outdoor landscaping and irrigation; and

WHEREAS, careful water management that includes water efficient landscaping and irrigation practices, is essential to ensure a reliable minimum supply of water to meet current and future water supply needs; and

WHEREAS, Article XI, Section 7 of the California Constitution declares that a city or county may make and enforce within its limits all local, police, sanitary, and other ordinances and regulations not in conflict with general laws; and

WHEREAS, on December 15, 2009, the Planning Commission of the City of Claremont held a duly noticed public hearing on this ordinance, at which time all persons wishing to testify in connection with this ordinance were heard, and after considering all public comments recommended that the City Council adopt this ordinance by a 5-2 vote; and

WHEREAS, on January 12, 2010, the City Council of the City of Claremont held a duly noticed public hearing at which time all persons wishing to testify in connection with this ordinance were heard.

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF CLAREMONT DOES ORDAIN AS FOLLOWS:

Section 1. After considering all public comments, the City Council determined that this ordinance is in the best interest of the City based on the following reasons:

(a) The provisions contained in this ordinance are necessary for the health, safety, and general welfare of the community.

(b) The water efficient landscape regulations in this ordinance are consistent with the General Plan and further the implementation of the General Plan.

(c) The water efficient landscape regulations in this ordinance promote the following goals and policies of the City.

General Plan Goal 5-15: Achieve the highest level of water conservation possible.

General Plan Policy 5-15.2: Educate the public about the importance of water conservation and avoiding wasteful water habits.

Claremont Sustainable City Plan Goal 1.2: Minimize waste of water resources by advocating and implementing wise use and conservation measures.

(d) This ordinance satisfies Action 1.2.6 of the Claremont Sustainable City Plan, which calls for adoption of a water efficiency ordinance.

Section 2. The City Council hereby determines that this ordinance is exempt from review under the California Environmental Quality Act ("CEQA") (California Public Resources Code Section 21000 et seq.), pursuant to State CEQA Guideline Regulation 15307 (14 Cal. Code Regs., § 15307), which exempts actions taken by regulatory agencies, as authorized by State law, to assure the maintenance, restoration, enhancement, or protection of a natural resource where the regulatory process involves procedures for protection of the environment. The adoption of this ordinance is required by State Law (AB1881) and will result in the enhancement and protection of water resources in the City. The ordinance will not result in negative impacts to the environment. It is therefore exempt from the provisions of CEQA.

The City Council hereby directs the City Manager or designee to prepare and file a Notice of Exemption as soon as possible following adoption of this ordinance.

Section 3. Based on the findings contained in Sections 1 and 2 above, Title 16, of the Claremont Municipal Code is hereby amended by adding Chapter 16.131 to read as follows:

"Chapter 16.131

Water Efficient Landscape Requirements

Sections:

16.131.010 Purpose
16.131.020 Applicability
16.131.030 Implementation Procedures
16.131.040 Landscape Water Use Standards
16.131.050 Delegation
16.131.060 Definitions

16.131.010 Purpose

A. The State Legislature has found that:

(1) the waters of the State are of limited supply and are subject to ever increasing demands;

(2) the continuation of California's economic prosperity is dependent on the availability of adequate supplies of water for future uses;

(3) it is the policy of the State to promote the conservation and efficient use of water and to prevent the waste of this valuable resource;

(4) landscapes are essential to the quality of life in California by providing areas for active and passive recreation and as an enhancement to the environment by cleaning air and water, preventing erosion, offering fire protection, and replacing ecosystems lost to development;

(5) landscape design, installation, maintenance, and management can and should be water efficient; and

(6) Article X, Section 2 of the California Constitution specifies that the right to use water is limited to the amount reasonably required for the beneficial use to be served, and the right does not and shall not extend to waste or unreasonable method of use of water.

B. The City hereby finds that:

(1) The City of Claremont has an established a water conservation ordinance that prohibits wasteful uses of water throughout the City by all water users;

(2) The wholesale water purveyor and regional water import agency have developed an allocation-based and tiered water rate structure

that requires the local retail water provider to document water use for all water meters in the City;

(3) Incentive-based water use efficiency programs have been actively implemented within Claremont for many years;

(4) current local design practices in new landscapes typically achieve the State Model Water Efficient Landscape Ordinance water use goals;

(5) all water services within the City are metered;

(6) landscape plan submittal and review has been a long standing practice in Claremont;

(7) the average rainfall in Claremont is approximately 17.3 inches per year and the annual reference evapotranspiration rate (Annual ETo) is 51.3; and

(8) the local water purveyor has implemented a tiered-rate billing structure and enforcement of water waste prohibitions for all existing properties throughout its service area, which includes the City of Claremont in its entirety.

C. Consistent with these findings, the purpose of the City's Water Efficient Landscape Ordinance is to establish an alternative local ordinance that is acceptable under AB 1881 as being at least as effective as the State Model Water Efficient Landscape Ordinance in the context of conditions in the City in order to:

(1) promote the values and benefits of landscapes while recognizing the need to invest water and other resources as efficiently as possible;

(2) establish a set of procedures for planning, designing, installing, and maintaining and managing water efficient landscapes in *new construction* and rehabilitated projects;

(3) establish provisions for water management practices and water waste prevention for existing landscapes; and

(4) use water efficiently without waste by setting a *Maximum Applied Water Allowance* as an upper limit for water use and reduce water use to the lowest practical amount.

[Note: Authority cited: Section 65593, Government Code. Reference: Sections 65591, 65593, 65596, Government Code.]

16.131.020 Applicability

A. **New Landscape Installations or Rehabilitation Projects:** This chapter shall apply to the following *landscape projects*:

(1) new landscape installations or landscape rehabilitation projects by public agencies or private non-residential developers, except for cemeteries, with a *landscaped area*, including pools or other *water features* but excluding hardscape, equal to or greater than 2,500 square feet, and which are otherwise subject to a discretionary approval of a landscape plan, or which otherwise require a ministerial *permit* for a landscape or *water feature*;

(2) new landscape installations or landscape rehabilitation projects by developers or property managers of single-family and multi-family residential projects or complexes with a landscaped area, including pools or other *water features* but excluding *hardscape*, equal to or greater than 2,500 square feet, and which are otherwise subject to a discretionary approval of a landscape plan, or which otherwise require a ministerial *permit* for a landscape or *water feature*;

(3) new landscape installation projects by individual homeowners on single-family or multi-family residential lots with a total project landscaped area, including pools or other *water features* but excluding *hardscape*, equal to or greater than 5,000 square feet, and which are otherwise subject to a discretionary approval of a landscape plan, or which otherwise require a ministerial *permit* for a landscape or *water feature*;

(4) recognizing the special landscape management needs of cemeteries, prior to new landscape installations or landscape rehabilitation projects at cemeteries the following shall be prepared: a water efficient landscape worksheet; landscape and irrigation maintenance schedule; and irrigation audit, survey and water use analysis as required in the *guidelines.*

B. **Existing Landscapes:** Section 16.131.040 (B), of this Chapter shall apply to:

(1) all *landscaped areas* over 1 acre in size, whether installed prior to or after January 1, 2010; and

(2) all *landscaped areas* installed after January 1, 2010 to which Section 16.131.020 (a) is applicable.

C. This chapter shall not apply to:

(1) registered local, state, or federal historical sites;

(2) *ecological restoration projects* that do not require a permanent irrigation system;

(3) *mined-land reclamation projects* that do not require a permanent irrigation system; or

(4) plant collections, as part of botanical gardens and arboretums that are open to the public.

[Note: Authority Cited: Section 65595, Government Code. Reference: Section 65596, Government Code.]

16.131.030 Implementation Procedures

A. Prior to installation, a *Landscape Documentation Package* shall be submitted to the City for review and approval of all *landscape projects* subject to the provisions of this Chapter. Any *Landscape Documentation Package* submitted to the City shall comply with the provisions of the *guidelines*.

B. The *Landscape Documentation Package* shall include a certification by a professional appropriately licensed in the State of California stating that the landscape design and water use calculations have been prepared by or under the supervision of the licensed professional and are certified to be in compliance with the provisions of this chapter and the *guidelines*.

(1) Landscape and irrigation plans shall be submitted to the City for review and approval with appropriate water use calculations.

(2) Water use calculations shall be consistent with calculations contained in the *guidelines* and shall be provided to the *local water purveyor,* as appropriate, under procedures determined by the City.

(3) Verification of compliance of the landscape installation with the approved plans shall be obtained through a *Certification of Completion* in conjunction with a Certificate of Use and Occupancy or Permit Final process, as provided in the *guidelines*.

[Note: Authority Cited: Section 65595, Government Code. Reference: Section 65596, Government Code.]

16.131.040 Landscape Water Use Standards

A. **New and Rehabilitated Landscapes:** For landscape installation or rehabilitation projects subject to the applicability requirements of Section 16.131.020 (a), the Estimated Applied Water Use allowed for the landscaped area shall not exceed the Maximum Applied Water Allowance (MAWA) calculated using an evapotranspiration adjustment factor (ETAF) of 0.7, except for *special landscaped areas* where the MAWA is calculated using an ETAF of 1.0; or the design of the landscaped area shall otherwise be shown to be equivalently water-efficient in a manner acceptable to the City; as provided in the guidelines.

B. **Existing Landscapes:** Irrigation of all *landscaped areas* shall be conducted in a manner conforming to the rules and requirements, and shall be subject to penalties and incentives for water conservation and water waste prevention as determined and implemented by the *local water purveyor* or as mutually agreed by *local water purveyor* and the City.

16.131.050 Delegation

The City may delegate to, or enter into a contract with, a *local agency* to implement, administer, and/or enforce any of the provisions of this chapter.

16.131.060 Definitions

The following definitions are applicable to this chapter:

"***Applied water***" means the portion of water supplied by the irrigation system to the landscape.

"***Budget-based tiered-rate structure***" means tiered or block rates for irrigation accounts charged by the retail water agency in which the block definition for each customer is derived from lot size or irrigated area and the evapotranspiration requirements of landscaping.

"***Ecological restoration project***" means a project where the site is intentionally altered to establish a defined, indigenous, historic ecosystem.

"***Estimated Applied Water Use***" means the average annual total amount of water estimated to be necessary to keep plants in a healthy state, calculated as provided in the *guidelines*. It is based on the *reference evapotranspiration* rate, the size of the landscape area, *plant water use factors*, and the relative *irrigation efficiency* of the irrigation system.

"***Evapotranspiration***" or "***ETo***" – see "Reference Evapotranspiration"

"***Evapotranspiration adjustment factor***" or "***ETAF***" is equal to the *plant factor* divided by the *irrigation efficiency factor* for a *landscape project*, as described in the *guidelines*.

The *ETAF* is calculated in the context of local *reference evapotranspiration*, using site-specific *plant factors* and *irrigation efficiency factors* that influence the amount of water that needs to be applied to the specific *landscaped area*.

A combined plant mix with a site-wide average *plant factor* of 0.5 (indicating a moderate water need) and average *irrigation efficiency* of 0.71 produces an *ET adjustment factor* of (0.7) = (0.5/0.71), which is the standard of water use efficiency generally required by this chapter and the *guidelines,* except that the *ETAF* for a *special landscape area* shall not exceed 1.0.

"***Guidelines***" refers to the Guidelines for Implementation of the Water Efficient Landscape Ordinance, as adopted by resolution of the City Council, which describes procedures, calculations, and requirements for *landscape projects* subject to this chapter.

"***Hardscapes***" means any durable material or feature (*pervious* and *non-pervious*) installed in or around a *landscaped area*, such as pavements or walls. Pools and other *water features* are considered part of the *landscaped area* and not considered *hardscapes* for purposes of this chapter.

"***Homeowner installed landscape***" means any landscaping either installed by a private individual for a single family residence or installed by a licensed contractor hired by a homeowner. A homeowner, for purposes of this ordinance, is a person who occupies the dwelling he or she owns. This definition excludes speculative homes, which are not owner-occupied dwellings and which are subject under this ordinance to the requirements applicable to developer-installed residential landscape projects.

"***Irrigation efficiency***" means the measurement of the amount of water beneficially used divided by the amount of water applied. *Irrigation efficiency* is derived from measurements and estimates of irrigation system characteristics and management practices. The minimum average *irrigation efficiency* for purposes of this Chapter is 0.71. Greater *irrigation efficiency* can be expected from well designed and maintained systems.

"***Landscaped area***" means all the planting areas, *turf* areas, and *water features* in a landscape design plan subject to the *Maximum Applied Water Allowance* and *Estimated Applied Water Use* calculations. The *landscaped area* does not include footprints of buildings or structures, sidewalks, driveways, parking lots, decks, patios, gravel or stone walks, other *pervious* or *non-pervious hardscapes*, and other non-irrigated areas designated for non-development (e.g., open spaces and existing native vegetation).

"***Landscape contractor***" means a person licensed by the State of California to construct, maintain, repair, install, or subcontract the development of landscape systems.

"***Landscape Documentation Package***" means the documents required to be provided to the City for review and approval of landscape design projects, as described in the *guidelines*.

"***Landscape project***" means total area of landscape in a project, as provided in the definition of "*landscaped area,*" meeting the applicability requirements under Section 16.131.020 of this chapter.

"***Local agency***" means a city or county, including a charter city or charter county, that is authorized by the City to implement, administer, and/or enforce any of the provisions of the Water Efficient Landscape Ordinance on behalf of the City. The *local agency* may be responsible for the enforcement or delegation of enforcement of this Water Efficient Landscape Ordinance including, but not limited to, design review, plan check, issuance of *permits,* and inspection of a *landscape project.*

"***Local water purveyor***" means any entity, including a public agency, city, county, or private water company that provides retail water service.

"***Maximum Applied Water Allowance***" or "***MAWA***" means the upper limit of annual *applied water* for the *established landscaped area* as specified in Section 2.2 of the *guidelines*. It is based upon the area's *reference evapotranspiration*, the *ET Adjustment Factor*, and the size of the *landscaped area*. The *Estimated Applied Water Use* shall not exceed the *Maximum Applied Water Allowance*.

"***Mined-land reclamation projects***" means any surface mining operation with a reclamation plan approved in accordance with the Surface Mining and Reclamation Act of 1975.

"***New construction***" means, for the purposes of this Water Efficient Landscape Ordinance, a new building with a landscape or other new landscape such as a park, playground, or greenbelt without an associated building.

"***Non-pervious***" means any surface or natural material that does not allow for the passage of water through the material and into the underlying soil.

"***Pervious***" means any surface or material that allows the passage of water through the material and into the underlying soil.

"***Permit***" means an authorizing document issued by local agencies for *new construction* or *rehabilitated landscape*.

"***Plant factor***" or "***plant water use factor***" is a factor, when multiplied by *ETo*, that estimates the amount of water needed by plants. For purposes of this Water Efficient Landscape Ordinance, the *plant factor* range for low water use plants is 0 to 0.3; the *plant factor* range for moderate water use plants is 0.4 to 0.6; and the *plant factor* range for high water use plants is 0.7 to 1.0. *Plant factors* cited in this Water Efficient Landscape Ordinance are derived from the Department of Water Resources 2000 publication "Water Use Classification of Landscape Species."

"***Recycled water***" or "***reclaimed water***" means treated or recycled waste water of a quality suitable for non-potable uses such as landscape irrigation and *water features*. This water is not intended for human consumption.

"***Reference evapotranspiration***" or "*ETo*" means a standard measurement of environmental parameters which affect the water use of plants. *ETo* is given expressed in inches per day, month, or year as represented in Appendix A of the *Guidelines*, and is an estimate of the evapotranspiration of a large field of four-to seven-inch tall, cool-season grass that is well watered. *Reference evapotranspiration* is used as the basis of determining the *Maximum Applied Water Allowances*.

"***Rehabilitated landscape***" means any re-landscaping project that meets the applicability criteria of Section 16.131.020(a), where the modified landscape area is greater than 2,500 square feet, is 50% of the total landscape area, and the modifications are planned to occur within one year.

"***Smart automatic irrigation controller***" means an automatic timing device used to remotely control *valves* that operate an irrigation system and which schedules irrigation events using either evapotranspiration (weather-based) or soil moisture data.

"***Special landscape area***" means an area of the landscape dedicated solely to edible plants such as orchards and vegetable gardens, areas irrigated with *recycled water*, *water features* using *recycled water*, and areas dedicated to active play such as parks, sports fields, golf courses, and where *turf* provides a playing surface.

"***Turf***" means a ground cover surface of mowed grass. Annual bluegrass, Kentucky bluegrass, Perennial ryegrass, Red fescue, and Tall fescue are cool-season grasses. Bermudagrass, Kikuyugrass, Seashore Paspalum, St. Augustinegrass, Zoysiagrass, and Buffalo grass are warm-season grasses.

"***Valve***" means a device used to control the flow of water in an irrigation system.

"***Water feature***" means a design element where open water performs an aesthetic or recreational function. *Water features* include ponds, lakes, waterfalls, fountains, artificial streams, spas, and swimming pools (where water is artificially supplied). The surface area of *water features* is included in the high water use *hydrozone* of the *landscaped area*. Constructed wetlands used for on-site wastewater treatment, habitat protection or storm water best management practices that are not irrigated and used solely for water treatment or storm water retention are not *water features* and, therefore, are not subject to the water budget calculation.

[Note: Authority Cited: Section 65595, Government Code. Reference: Sections 65592, 65596, Government Code.]

Section 4. Severability: The provisions of this ordinance are severable, and the invalidity of any section, paragraph, phrase, clause, or part of this ordinance shall not affect the validity or effectiveness of the remainder of this ordinance.

Section 5. Certification: The Mayor shall sign this ordinance and the City Clerk shall attest and certify to the passage and adoption of it, and within fifteen (15) days, publish in the Claremont Courier, a semi-weekly newspaper of general circulation, printed, published, and circulated in the City of Claremont and thirty (30) days thereafter it shall take effect and be in force.

PASSED, APPROVED, AND ADOPTED this 9th day of March, 2010.

Linda P. Elder
Mayor, City of Claremont

ATTEST:

Lynne E. Thomas
City Clerk, City of Claremont

APPROVED AS TO FORM:

Sonia R. Carvalho
City Attorney, City of Claremont

STATE OF CALIFORNIA)
COUNTY OF LOS ANGELES) ss.
CITY OF CLAREMONT)

I, Lynne Fryman, City Clerk of the City of Claremont, County of Los Angeles, State of California, hereby certify that the foregoing Ordinance No. 2010-02 was introduced at a regular meeting of said council held on the 23rd day of February, 2010, that it was regularly passed and adopted by said city council, signed by the mayor, and attested by the city clerk of said city, all at a regular meeting of said council held on the 9th day of March, 2010, and that the same was passed and adopted by the following vote:

AYES:	COUNCILMEMBERS:	CALAYCAY, ELDERKIN, PEDROZA, SCHROEDER, YAO
NOES:	COUNCILMEMBERS:	NONE
ABSTAINED:	COUNCILMEMBERS:	NONE
ABSENT:	COUNCILMEMBERS:	NONE

Lynne E. Fryman
City Clerk of the City of Claremont

RECORDING REQUESTED BY AND MAIL TO:

Claremont Courier
1420 N. Claremont Blvd.
Suite 205-B
Claremont, CA 91711
909-621-4761

This space is for the County Clerk's Filing Stamp

PROOF OF PUBLICATION
(2015.5 C.C.P)

STATE OF CALIFORNIA.
County of Los Angeles,

I am a citizen of the United States and a resident of the County aforesaid: I am over the age of eighteen years, and not a party to or interested in the above-entitled matter. I am the principal clerk of the printer of the

CLAREMONT COURIER

A newspaper of general circulation, printed and published **semi-weekly** in the City of **Claremont**, County of Los Angeles; and which newspaper has been adjudged a newspaper of general circulation by the Superior Court of Los Angeles, State of California, under the date of 9/17, 1908, Case Number C134; that the notice, of which the annexed is a printed copy (set in type not smaller than nonpareil), has been published in each regular and entire issue of said newspaper and not in any supplement thereof on the following dates, to wit:

3/13

all in the year 2010

I certify (or declare) under penalty of perjury that the foregoing is true and correct.
Dated at Claremont, California.
this 13 day of March, 2010

Signature

MAIL TO: _____

Proof of Publication of

ON BACK

CITY WATER EFFICIENT LANDSCAPE ORDINANCE

SUMMARY OF ORDINANCE NO. 2010-02 INTRODUCED AT THE REGULAR CITY COUNCIL MEETING OF FEBRUARY 23, 2010 AND ADOPTED AT REGULAR CITY COUNCIL MEETING OF MARCH 9, 2010

(Full text of this ordinance is on file in the office of the City Clerk)

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF CLAREMONT, CALIFORNIA, AMENDING TITLE 16 OF THE CLAREMONT MUNICIPAL CODE BY ADDING CHAPTER 16.131 REGARDING THE ADOPTION OF A WATER EFFICIENT LANDSCAPE ORDINANCE.

THE FOLLOWING IS A SUMMARY OF THE ABOVE TITLED ORDINANCE:

The provisions of the proposed ordinance apply to the following projects:

New homeowner installed or hired landscapes greater than or equal to 5,000 square feet.

New and rehabilitated public agency, private development, and developer installed single and multi-family landscape projects greater than or equal to 2,500 square feet.

Guidelines for implementing the proposed ordinance include formulas for calculating the maximum allowable water that can be used for each new landscape. Developers and homeowners installing landscaping for which this ordinance is applicable will be required to:

Submit a landscape documentation package that demonstrates compliance with the maximum allowable water use for the landscape.

Design the landscape to be water efficient by organizing plants into hydrozones and utilizing water-conserving plants and turf.

Install the landscaping in accordance with the plan.

Have a licensed landscape professional certify that the landscaping was installed in accordance with the plan and that the irrigation system is operating as designed.

Maintain and operate the landscape in a water efficient manner.

Claremont's proposed water efficient landscape ordinance is available for review at City Hall, 207 Harvard Avenue; the Claremont Public Library, 208 Harvard Avenue; and on the City of Claremont website, www.ci.claremont.ca.us. Please submit any written comments to Senior Planner Christopher Veirs, P.O. Box 880, Claremont, CA 91711 or at cveirs@ci.claremont.ca.us. For more information, contact Mr. Veirs at (909) 399-5486.

STATE OF CALIFORNIA)
COUNTY OF LOS ANGELES) ss.
CITY OF CLAREMONT)

I, Lynne E. City Clerk of the City of Claremont, County of Los Angeles, State of California, hereby certify that the foregoing Ordinance No. 2010-02 was introduced at a regular meeting of said council held on the 23rd day of February, 2010, that it was regularly passed and adopted by said city council, signed by the mayor, and attested by the city clerk of said city, all at a regular meeting of said council held on the 9th day of March, 2010, and that the same was passed and adopted by the following vote:

AYES: Councilmembers: Calaycay, Elderkin, Pedroza, Schroeder, Yao
NOES: Councilmembers: None
ABSENT: Councilmembers: None
ABSTAINED: Councilmembers: None

Lynne E. Fryman

City Clerk of the City of Claremont
PUBLISH: March 13, 2010

APPENDIX B

CITY OF CLAREMONT'S LOCAL HAZARD MITIGATION PLAN

City of Claremont
Local Hazard Mitigation Plan
March 7, 2022

PREPARED UNDER CONTRACT WITH
QUINNWILLIAMS

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Section 1: Introduction

Overview

The City of Claremont prepared this Local Hazard Mitigation Plan (LHMP) to guide hazard mitigation planning to better protect the people and property of the City from the effects of natural disasters and hazard events. This LHMP demonstrates the community's commitment to reducing risks from hazards and serves as a tool to help decision makers direct mitigation activities and resources. With this LHMP, the City may be eligible for certain federal disaster assistance, specifically, the FEMA Hazard Mitigation Grant Program (HMGP), Pre-Disaster Mitigation (PDM) program, and the Flood Mitigation Assistance (FMA) program.

The LHMP is a living document that should be reviewed, monitored, and updated to reflect changing conditions and new information. As required, the Plan must be updated every five years to remain in compliance with regulations and Federal mitigation grant conditions.

This LHMP is an update of the City of Claremont's 2015 Hazard Mitigation Plan approved by FEMA, March 17, 2015. This LHMP presents updated information regarding hazards being faced by Claremont as determined by the Planning Team and presents mitigation measures introduced and/or continued since 2015 to help reduce consequences from hazards, and outreach/education efforts within the community. Additionally, the Plan considers the impact of climate change.

The following FEMA definitions[1] are used throughout this plan:

Hazard Mitigation – Any sustained action taken to reduce or eliminate the long-term risk to human life and property from hazards.

Planning – The act or process of making or carrying out plans; specifically, the establishment of goals, policies, and procedures for a social or economic unit.

Purpose of Local Hazard Mitigation Plan

The City of Claremont is one of 88 cities within Los Angeles County. Claremont is located in the foothills of the San Gabriel Mountains. The City is characterized by the unique and attractive landscape that makes the area so popular. However, the potential impacts of natural hazards associated with the terrain make the environment and population vulnerable to natural disaster situations.

The City is subject to drought, earthquakes, flooding, wildfires, landslides, and windstorms, and with the events of recent years the City could also be subject to cyber

[1] FEMA, 2002, *Getting Started, Building Support for Mitigation Planning*, FEMA 386-1

attacks. It is impossible to predict exactly when these disasters will occur, or the extent to which they will affect the City. However, with careful planning and collaboration among public agencies, private sector organizations, and citizens within the community, it is possible to minimize the losses that can result from these natural disasters.

The inevitability of hazards, and the growing population and activity within the City create an urgent need to develop strategies, coordinate resources, and increase public awareness to reduce risk and prevent loss from future hazard events. Identifying the risks posed by hazards and developing strategies to reduce the impact of a hazard event can assist in protecting life and property of citizens and communities. Local residents and businesses can work together with the City to create a Mitigation Plan that addresses the potential impacts of hazard events.

As the costs of damage from disasters continue to increase, the City realizes the importance of identifying effective ways to reduce vulnerability to disasters. Mitigation plans assist communities in reducing risk from hazards by identifying resources, information, and strategies for risk reduction, while helping to guide and coordinate mitigation activities throughout the City.

The plan provides a set of action items to reduce risks from hazards through education and outreach programs and to foster the development of partnerships, and implementation of preventative activities such as land use programs that restrict and control development in areas subject to damage from hazards.

The resources and information within the Mitigation Plan:

- ✓ Establish a basis for coordination and collaboration among agencies and the public of City of Claremont;
- ✓ Identify and prioritize future mitigation projects; and
- ✓ Assist in meeting the requirements of federal assistance programs.

The Mitigation Plan works in conjunction with other City plans, including the City General Plan, Emergency Operations Plan, and Capital Improvement Plan.

Mitigation Planning Process

The process for creating the 2021 Local Hazard Mitigation Plan started with identifying members for the Planning Team. Each team member represented different City department and specific divisions within those departments with a role in mitigation efforts. The Planning Team met and identified characteristics and consequences of natural hazards with significant potential to affect the City.

Hazard mitigation strategy and goals were developed by understanding the risk posed by the identified hazards. The group also determined hazard mitigation activities and priorities to include scenarios for both present and future conditions. The final Mitigation

Plan will be implemented through various projects, changes in day-to-day city operations, and through continued hazard mitigation development.

Authority

The LHMP was prepared in response to Disaster Mitigation Act of 2000 (DMA 2000). DMA 2000 (also known as Public Law 106-390) requires state and local governments to prepare Mitigation Plans to document their Mitigation Planning process, and identify hazards, potential losses, mitigation needs, goals, and strategies. This type of planning supplements the City's comprehensive emergency management program. Under DMA 2000, each state and local government must have a federally approved Mitigation Plan to be eligible for hazard mitigation grant funding.

California Senate Bill (SB) 379 passed in 2016 requires all cities and counties to include climate adaptation and resiliency strategies in the safety elements of their general plans upon the next revision beginning January 1, 2017. The bill requires the climate adaptation update to include a set of goals, policies, and objectives for their communities based on the vulnerability assessment, as well as implementation measures, including the conservation and implementation of natural infrastructure that may be used in adaptation projects. Specifically, the bill requires that upon the next revision of a general plan or local hazard mitigation plan, the safety element is to be updated as necessary to address climate adaptation and resiliency strategies applicable to the city or county.

Scope

The City's LHMP is a single jurisdictional plan that geographically covers the entire area within the City's jurisdictional boundaries and City owned facilities and land. This plan provides a framework for planning for natural hazards as well as cyber threats. The resources and background information in the plan are applicable Citywide and to City-owned facilities outside of the City boundaries, and the goals and recommendations provide groundwork for local mitigation plans and partnerships. The Regional Map of Claremont shows the regional proximity of the City to its adjoining communities.

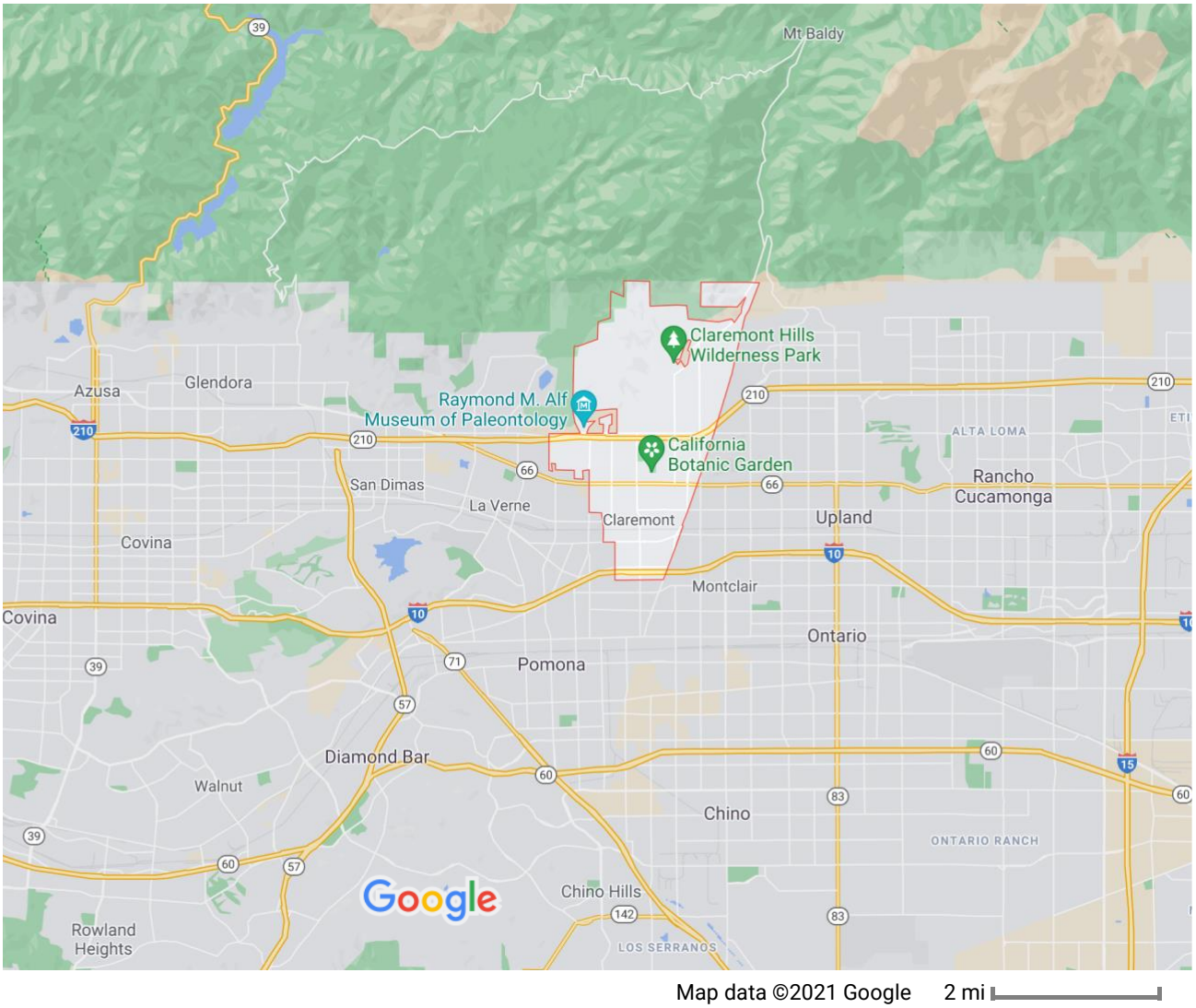
Plan Adoption

The 2021 Mitigation Plan was presented to City Council for adoption on September 14, 2021. A copy of the City Council Resolution is located in **Appendix 1**.

Plan Approval

Following incorporation of input from the City Council, the Final Draft Plan was forwarded to CalOES for review and approval and then to FEMA for final approval. FEMA issued an approval on _____.

Figure 1: Regional Map of Claremont



Source: Google Maps

Section 2: Planning Process

The process for updating the Local Hazard Mitigation Plan started with identifying members for the Planning Team, which was assembled to oversee the development of the Plan. Each team member represented different City department and specific divisions within those departments with a role in mitigation efforts. A subcommittee consisting of the Chair of the Planning Team and the Assistant City Manager was assembled, as well.

Hazard Mitigation Planning Team

Agency	Name	Department	Position
Claremont	Karlan Bennett, Chair	Police Department	Lieutenant
Claremont	Jamie Earl	City Manager's Office	Assistant City Manager
Claremont	Melissa Vollaro	Human Services	Director
Claremont	Robert Ewing	Police Department	Sergeant
Claremont	Kristin Mikula	Community Services	Manager
Claremont	Vince Ramos	Community Development	Associate Engineer
QuinnWilliams	Julie Quinn	Consultant	Partner
QuinnWilliams	Katherine Williams	Consultant	Partner

Throughout the process the Planning Team's efforts were supported by the City of Claremont and its Council members.

City of Claremont City Council

- ✓ Jennifer Stark, Mayor
- ✓ Jed Leano, Mayor Pro Tem
- ✓ Corey Calaycay, Council Member
- ✓ Sal Medina, Council Member
- ✓ Ed Reece, Council Member

Consulting Services

The update to the Plan was facilitated by the consulting group, QuinnWilliams, LLC, a woman-owned business based in Los Angeles that specializes in emergency and security preparedness.

QuinnWilliams, LLC

- ✓ Project Manager: Katherine Williams
- ✓ Senior Analyst: Julie Quinn

The Planning Team met monthly to provide guidance, review progress, identify issues, and to coordinate stakeholder meetings. The Planning Team also provided background documents and facilitated data collection.

Importantly, the Planning Team discussed whether to include any non-natural hazards such as civil unrest, cyber disruption, and epidemic/pandemic. Because of the frequency and severity of cyber disruptions in and around the Southern California region during 2020-2021, the Planning Team decided to include cyber disruption in the Plan.

Additionally, the Planning Team discussed how to best incorporate climate change into the Plan. The Planning Team made the decision to address climate change as an element of each hazard, rather than a separate hazard.

Hazard mitigation strategies and goals were developed by understanding the risk posed by the identified hazards. The Planning Team also determined hazard mitigation activities and priorities to include scenarios for both present and future conditions. The final Mitigation Plan will be implemented through various projects, changes in day-to-day city operations, and through continued hazard mitigation development.

Planning Team and Subcommittee Meetings

Table 1: Planning Team and Subcommittee Meetings

Date	Item
October 15, 2020	Planning Team kick-off meeting
November 10, 2020	Planning Team subcommittee meeting to discuss Risk Assessment Survey
November 15, 2020	Risk Assessment survey sent to Planning Team
December 3, 2020	Planning Team subcommittee meeting to discuss Risk Assessment Survey findings
December 10, 2020	Planning Team meeting to discuss Risk Assessment Survey findings
January 27, 2021	Planning Team meeting to discuss hazards for inclusion in Plan
February 10, 2021	Planning Team subcommittee meeting to discuss Hazard Vulnerability Analysis
February 24, 2021	Planning Team meeting to review draft Risk Assessment

Date	Item
March 8, 2021	Planning Team subcommittee meeting to discuss Public Outreach Meeting
March 24, 2021	Planning Team subcommittee meeting to review prior Plan's mitigation strategies and projects
April 14, 2021	Planning Team meeting to discuss current and planned mitigation strategies
April 26, 2021	Second Planning Team Meeting to discuss current and planned mitigation strategies
April 28, 2021	Planning Team subcommittee meeting to review mitigation strategies
May 12, 2021	External Stakeholder Meeting with Planning Team Subcommittee
July 30, 2021	Planning Team review of public comment on Plan

Participating Organizations

Successful mitigation planning efforts require collaboration with, and support from, federal, state, local, and regional governments; citizens; the private sector; universities; and non-profit organizations. In its process, the Planning Team consulted a variety of sources to ensure that the updated LHMP results in practicable actions tailored to meet Claremont's local needs and circumstances.

In April 2021, the Assistant City Manager sent an email inviting external stakeholders to participate in a virtual LHMP meeting. The list of potential participants included neighboring communities, local and regional agencies involved in hazard mitigation activities, representatives from agencies with the authority to regulate development, and others who had expressed interest to be involved in the planning process.

The meeting was held on May 12, 2021. The Chair of the Planning Committee and the Assistant City Manager attended on behalf of the Planning Team, as did the consultants. Following a presentation and review of the proposed updates to the Plan, the consultants facilitated a "round robin" discussion during which each stakeholder provided insight and feedback on mitigation projects impacting their area of expertise or interest.

At the conclusion of the meeting, the Assistant City Manager reviewed next steps and invited everyone to attend the next public meeting. Following the meeting, the Assistant City Manager sent a reminder email about the public meeting. The working final draft of

the LHMP was also circulated to the stakeholders via email with a request asking for their input and any suggested revisions.

Table 2: Participating Organizations

Organization/Agency	Name
Claremont Chamber of Commerce	Randy Lopez, Executive Director
Claremont InterFaith Council	Thom Johnson, President
Claremont Unified School District	Lisa Shoemaker, Assistant Superintendent
The Claremont Colleges Services	Stan Skipworth, Assistant Vice President and Director of Campus Safety
Claremont Wildlands Conservancy	Muriel Poston, Board Member
Community Emergency Response Team (CERT)	Larry Horowitz, Claremont CERT Coordinator
Disaster Management Area D	Diana Manzano-Garcia, Disaster Management Area Coordinator
Golden State Water Company	Ethan Leano, Claremont Distribution Superintendent
Los Angeles County Fire Department	Mike Inman, Assistant Fire Chief
Pomona Valley Protective Association	William McDonald, President
SoCal Edison	Marissa Castro-Salvati, Local Public Affairs Region Manager
SoCal Gas	Robert Cruz, Public Affairs Manager
Three Valleys Municipal Water District	Richard Hansen, General Manager
Tri-City Mental Health Authority	Toni Navarro, Executive Director
The Webb Schools	Theresa Smith, Head of Schools

Public Engagement

Under FEMA guidelines, local hazard mitigation planning processes should create opportunities for members of the public to be involved in plan development—at a

minimum, during the initial drafting stage and during plan approval. The Planning Team chose to go beyond minimum standards and conduct more extensive community outreach to help ensure that the LHMP reflects community values, concerns, and priorities.

Public Meetings

The LHMP update occurred in the midst of the COVID-19 pandemic. As such, in-person meetings were not an option and all community outreach was conducted virtually. To facilitate and host effective and engaging meetings, the Planning Team utilized FEMA's resource, *Virtual Meetings: Guide to Virtual Hazard Mitigation Planning Meetings.* **Appendix 2** contains a copy of the guidance.

The LHMP update also occurred in concurrence with the City's update of the safety element of its General Plan. Because with each project necessitated public outreach and engagement, City officials decided it would be most respectful of residents' time to coordinate these meetings whenever possible. The LHMP briefings were held in conjunction with the General Plan update meetings. This also allowed residents to understand more fully how the two plans interact. This was specifically important regarding climate change and its impacts in the years to come. While the LHMP has a five year timeframe, the General Plan projections look 20 to 40 years ahead, and in many cases are better suited to addressing climate-exacerbated hazards and climate change impacts.

The City held three public meetings, and notices of each meeting were widely distributed in advance in accordance with City notification requirements, the engagement strategy, legal requirements, and best practices per the FEMA guidance on virtual meetings. **Appendix 3** contains photos of the virtual meetings and power point slides that were shared.

- **Public Meeting #1 (December 17, 2020)**
  This meeting was the kick-off for public engagement Members of the public learned about the importance of an LHMP, what the Plan would include, and the timeline for developing it.

- **Public Meeting #2 (March 10, 2021)**
  members of the public learned about the hazard profiles developed for the plan and Claremont's vulnerabilities to individual hazard types. Activities at this meeting included opportunities to suggest hazard mitigation actions and to comment on others

- **Public Meeting #3 (July 14, 2021)**
  This meeting marked the beginning of the public review period. It included a discussion about how the Plan was prepared, the results of the analyses, and the chosen hazard mitigation strategies. Members of the public were also invited to comment on the Plan.

Online Engagement

The Planning Team set up a project website as a simple, one-stop location for community members to learn about the LHMP. The website included information about what an LHMP is and why the City prepared one. It had links to materials and plan documents as they became available and allowed members of the public to receive notifications about upcoming events. The Team also used social media accounts, such as Facebook, Twitter, and Instagram, to send quick notifications or bursts of information about the Plan and the development process.

Review of LHMP

On July 15, 2021, the City of Claremont released a draft copy of the LHMP for public review and comment. The document was posted electronically on the City's website, and hard copies were made available upon request. The City distributed notifications about the public review period through social media accounts and other online sources. The City received minor feedback during the public review process which was addressed and incorporated into the LHMP document.

On September 14, the LHMP was presented to the City Council for review and adoption. The LHMP was then submitted to CalOES for review and approval. Following approval by CalOES, the plan was submitted to FEMA for final approval. See **Appendix 1** for the City Council Resolution adopting the plan.

Use of Existing Data

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

- ✓ California Department of Water Resources Inundation Maps
- ✓ California Department of Water Resources Dams Within Jurisdiction of the State of California (2020)
- ✓ Claremont General Plan
- ✓ Claremont Hills Wilderness Park Implementation Plan (2016)
- ✓ Claremont Sustainable City Plan (2021)
- ✓ County of Los Angeles All Hazards Mitigation Plan (2019 Public Draft)
- ✓ County of Los Angeles General Plan (2015)
- ✓ County of Los Angeles GIS Viewer
- ✓ HAZUS reports
- ✓ Historic GIS maps and local inventory data
- ✓ Local Flood Insurance Rate Maps
- ✓ United States Army Core of Engineers National Inventory of Dams

These documents were used as resources throughout the Plan.

Plan Maintenance

Mitigation Planning is an ongoing process involving changes as new hazards occur, as the area develops, and as more is learned about hazards and their impacts. The Planning Team will monitor changing conditions, help implement mitigation activities, annually review the plan to determine if City goals are being met, and provide an update to CalOES and FEMA every five years. In addition, the Planning Team will continue public participation in the plan maintenance process, review After-Action Reports generated after any disaster that impacts the City, and revise the mitigation plan, as needed. (See **Section 7: Plan Maintenance** for additional Information)

Section 3: Community Profile

Geography and the Environment

Claremont is located at the foothills of the San Gabriel Mountains, bounded by the Angeles National Forest to the north, City of La Verne to the west, City of Pomona to the south and the City of Montclair and City of Upland to the east. The City has an area of 13.3 square miles and elevations range from a high of about 1800' to 1100', north to south. The City's terrain is steeply sloping alluvial fan (4% grade NW to SE). The native vegetation consists of chaparral, coastal sage scrub, oak woodland, grasses, and riparian vegetation types.

The City owns 21 parks and sports fields with 2,534 acres of public parkland, of which 2,378 is wilderness. This includes the Thompson Creek Trail, a linear park following a 2.8-mile paved trail.

The City is served by the 10 and 210 freeways. The main arterial highways traveling North and South are Towne Avenue, Indian Hill Boulevard, Mills Avenue and College Avenue. The main arterial highways traveling West and East are Baseline Road, Foothill Boulevard, and Arrow Highway.

History

The area comprising the City of Claremont was a part of the San Gabriel Mission established in 1771. A claim to land was filed in 1871, and Claremont became a community when the Santa Fe Railroad connection between Los Angeles and Chicago was completed in 1887. The City of Claremont was eventually incorporated in 1907.

Below is the History of Claremont as noted by City historians and documented on the City's official website[2]:

> Much of what Claremont is today is the direct result of actions taken by the community's founders more than 100 years ago. Trees planted at the turn of the century now compete with nearby mountain peaks for dominance of the local skyline. The Claremont Colleges have become some of the nation's most highly respected educational and cultural institutions. The historic central core remains a vital residential and retail district, one of the last true "downtowns" in the region. And the spirit of Claremont's original "town meeting" form of self-governance lives on in today's active and involved citizenry—citizens who continue to build on the successes of the past in order to ensure an even brighter future.

[2] https://www.ci.claremont.ca.us/about-us/city-profile/history-of-claremont

The first known inhabitants of the Claremont region were the Tongva-Gabrielino tribe as evidenced by the discovery of a village on a mesa a few hundred yards northeast of the intersection of Foothill and Indian Hill Boulevards. In 1771, as the Spanish period in California began, Mission San Gabriel was founded, stretching from the San Bernardino Mountains to San Pedro Bay. Claremont was part of this vast tract, and many of the indigenous people (Tongva-Gabrielinos) were employed as shepherds for the padres.

After the missions were secularized by the Mexican government in 1834, most of the land within the present city limits became part of the Rancho San Jose owned by Ricardo Vejar and Don Ygnacio Palomares. Ygnacio's sister, Maria Barbara, lived with her husband and family in an adobe house in the area now known as Memorial Park. The Tongva-Gabrielinos continued to work for the Spanish settlers until smallpox took a heavy toll on the indigenous population in 1862 and 1873. By 1883, the few remaining Tongva-Gabrielinos had left the area.

Jedediah Smith, the first European man to enter California overland, passed through the Claremont region in 1826. W. T. "Tooch" Martin, the first anglo-European resident of Claremont, filed a claim on 156 acres near Indian Hill Boulevard in 1871. Martin lived by hunting game and keeping bees but eventually moved on as the population grew around him.

The Santa Fe Railroad provided the impetus for the creation of a community named Claremont in January 1887. It was one of about 30 town sites laid out between San Bernardino and Los Angeles in anticipation of a population explosion resulting from the arrival of the railroad. However, the real estate boom was short-lived. Claremont would have become one of a long list of local railroad "ghost towns" if not for the decision of the local land company to transfer its Hotel Claremont and 260 vacant lots to the recently-founded Pomona College in 1888.

The founders of Pomona College wanted to establish a school of "the New England style," and the community that grew up around it also reflected the founders' New England heritage. Even the form of local government they used, the Town Meeting, was brought with them from their hometowns in the East. Both the citizen involvement and the volunteerism on which the town meeting form of government is based continue to be hallmarks of Claremont today.

Beginning in 1904, there was talk of incorporating as a city. Proponents didn't want to rely on Los Angeles County for services, while opponents warned the community's weak tax base would result in bankruptcy in less than a year. Finally, after much debate, an election on the incorporation question was held on September 23, 1907. Nearly 95 percent of

Claremont's 131 eligible voters went to the polls. Incorporation was approved by a vote of 73 to 49, and the City of Claremont was officially incorporated on October 3, 1907.

At the same time the colleges were growing and expanding, so was the local citrus industry. Citrus ranches spread out across all the foothill communities. Claremont growers established one of the earliest citrus cooperatives for marketing and shipping citrus fruit, a model that led to the organization of the Sunkist cooperative. At its height, the industry supported four citrus packing houses, an ice house, and a precooling plant along the railroad tracks in Claremont.

Labor for the citrus industry was predominately provided by Mexican-Americans, often new arrivals from Mexico. Men served as pickers while women worked in the packing houses. By 1920, two Mexican-American neighborhoods had developed in Claremont: one in the area of El Barrio Park and the other near the packing houses west of Indian Hill Boulevard and north of the railroad. In addition to supporting the thriving citrus industry, Mexican labor contributed greatly to the early construction of the Claremont Colleges, including skilled crafting of many stone structures and ornamental features.

Citrus continued to flourish in the area until after the Second World War. That's when the pressure for residential development caused many growers to sell their land for housing tracts. The opening of the San Bernardino Freeway in 1954 also made it much easier for people not associated with citrus or the Colleges to live in Claremont. The city, which covered about 3.5 square miles at its incorporation in 1907, now covers more than 13 square miles with a population of over 34,000 residents.

The early Spanish, college, and citrus industry influences can still be seen in the community today. There are lush remnants of citrus and oak groves and a physical character reminiscent of Claremont's Spanish heritage and college-town influence. Claremont has many fine representatives of various architectural periods, particularly Victorian, neo-Classical Revival, Craftsman, and Spanish Colonial Revival. This diversity, sense of scale, and continuity singles it out as a unique community in Southern California.

Climate

The City benefits from a mild, temperate climate, with average monthly temperatures ranging from the high 40s and upper 80s. However, the temperatures can vary over a wide range, particularly when the Santa Ana winds blow, bringing higher temperatures and very low humidity. Temperatures rarely exceed 90 degrees Fahrenheit in the summer months (June-September), and rarely drop below 44 degrees Fahrenheit in the winter months (November-March).

However, according to the 2021 City of Claremont Sustainable City Plan:

> The latest research indicates that Claremont is in a "hot zone" where temperatures are increasing rapidly. These hot zones are the scenes of a critical acceleration, places where geophysical processes are amplifying the general warming trend. They suggest which parts of the Earth will suffer the largest changes. If we continue on our current path, Claremont can expect to experience an increase in its mean temperature of at least 4 degrees F by 2050.

Rainfall in the city averages 21.4 inches of rain per year.[3] It is important to note that the term "average rainfall" can be misleading because over the recorded history of rainfall in the City amounts have ranged from no rain in some years to over 40 inches of rain in very wet years.

Minerals and Soils

Claremont is largely built on old alluvial soil and the presence of rocks interspersed in the soil is very common. Due to the artesian wells in the Pilgrim Place region (in the Central liquefaction zone), that soil is softer sand. The northern mountainous area of Claraboya is largely granite, while the northwestern Piedmont Mesa area is clay. The northeast area of Padua Hills is also clay. Understanding the geologic characteristics of City of Claremont is an important step in hazard mitigation and avoiding at-risk development. Rock hardness and soil characteristics can determine whether or not an area will be prone to geologic hazards such as earthquakes, liquefaction and landslides.

Population and Demographics

According to the 2019 Census from the U.S. Census Bureau, the City of Claremont has a residential population of about 36,266. The City continues to experience an increase in density through in-fill building, which is increasing the service loads on the built infrastructure, including roads, water supply, sewer services and storm drains.

Ethnically, Claremont is a very diverse City. According the 2019 Census figures, 49% of the population identifies as White Non-Hispanic; 25% as Hispanic; 14% as Asian; 5% as Black or African American Population; 1% as American Indian/Alaska Native; and 7% of the population identifies with two or more racial groups.

[3] https://cal-adapt.org/tools/local-climate-change-snapshot/

Table 3: City of Claremont Demographics

Racial/Ethnic Group	Population (%)*
White Non-Hispanic	49
Hispanic	25
Asian	14
Black or African American	5
American Indian/Alaska Native	1
Two or More Races	7

Source: 2019 U.S. Census Population Estimates

*Total can be greater than 100% because individuals may identify as more than one race

Housing and Community Development

The City participates in the Community Development Block Grant (CDBG) program, which is the primary resource available to address non-housing community development needs is the CDBG. The U.S. Department of Housing and Urban Development (HUD) provides funding for City of Claremont's Community Program. Annually, the City receives approximately $150,000 in CDBG funds.

The City of Claremont's Community Development Department (CDD) is a multi-functional Department responsible for promoting economic development of existing business retention; orderly planning; enforcement of life safety codes; and proper grading and street improvement activities. The CDD's mission is to ensure appropriate development consistent with the City's aesthetic standards.

There has been an increasing per capita personal income in the region since the 1970's. Per capita income is an estimate of total personal income divided by the total population. According to the 2019 U.S. Census estimate, the had a per capita income of $44,546, a 27% increase from the 2010 per capita income of $35,160. This estimate can be used to compare economic areas as a whole, but it does not reflect how the income is distributed among residents of the area being examined.

The City offers a variety of housing options. While the majority of residents live in one unit detached houses, there are many living in one unit attached and multi-residential units.

Table 4: City of Claremont Housing

	Number	Percent %
Housing Type:		
1-unit, detached	8,739	69.9%
1-unit, attached	1,034	8.3%
Multi-Residential (2-19 units)	1,802	14.3%
Multi-Residential (20+ units)	913	7.3%
Mobile homes	23	0.2%
Housing Statistics:		
Total Available Housing Units	12,511	100%
Owner-Occupied Housing	7,416	66.7%
Renter-Occupied	3,705	33.3%
Vacant Housing units	595	5.1%
Average Household Size:	2.69 persons	

Source: 2019 U.S. Census Data

Employment and Industry

The City of Claremont has over 16,000 residents who are employed. Nearly 60% of those employed are in the Management, Business, Science and Arts Occupation. Nearly 20% are employed in Sales and Office occupation, and 13% in Service occupations. The City business climate has been strong and growing with concentrations in educational, health and social services, as well as management/administrative services and manufacturing. The City also has employment in production, transportation and material moving, and natural resources, construction, and maintenance.

Mitigation activities are needed at the business level to ensure the safety and welfare of workers and limit damage to industrial infrastructure. Employees are highly mobile, commuting from surrounding areas to industrial and business centers. This creates a greater dependency on roads, communications, accessibility and emergency plans to reunite people with their families. Before a natural hazard event, large and small businesses can develop strategies to prepare for natural hazards, respond efficiently, and prevent loss of life and property.

Transportation and Commuting Patterns

The City meets its public transportation needs through a mixture of a regional transit system (MTA), and various city contracted bus systems. MTA provides both bus service to the City of Claremont and to the Los Angeles County metropolitan area. In addition to this service, the City promotes alternative transportation activities. The City also promotes

the Pomona Valley Transit system, which includes the Dial-a-Ride and taxi services for residents. Amtrak buses serve the Claremont community, as does the Metrolink Rail.

Many residents in the City of Claremont work outside of the City. This may suggest that population growth is a more suburban phenomenon, where residents work in the City of Claremont but live in other communities. However, the educational establishments within the community (especially the Claremont Colleges) draw a large portion of this employment.

Section 4: Risk Assessment

Risk Assessment Overview

Risk assessment is the process of measuring the potential loss of life resulting from hazards, as well as personal injury, economic injury and property damage, in order to determine the vulnerability of people, buildings, and infrastructure to hazard events.

The four components of a risk assessment are:

- Hazard Identification;
- Profiling Hazard Events;
- Impact Assessment; and
- Assessing Vulnerability.

Hazard Identification

The Claremont Hazard Mitigation Planning Team reviewed the hazards in the 2015 LHMP (earthquake, flood, landslide, wildfire, windstorm) and identified additional hazards based on recent events (drought, civil unrest, climate change, cyber disruption and epidemic/pandemic) to be included in the Risk Assessment. The Planning Team also reviewed existing documentation to determine which of these hazards posed the most significant threat to the City. The geographic extent of each of the identified hazards was identified by the Planning Team utilizing maps and data contained in the City's General Plan and City's Emergency Operations Plan. The County of Los Angeles Hazard Mitigation Plan served as a valuable resource.

The members of the Planning Team each completed a survey to rank the hazards according to probability, magnitude/severity, warning time and duration. The results of the survey were used to determine the hazards ranking according to the Calculated Priority Risk Index (CPRI). Utilizing the Calculated Priority Risk Index (CPRI) ranking technique, the Planning Team concluded that six of the identified natural hazards posed a significant threat to the City: earthquake, flood, wildfire, landslide, drought and windstorm. The hazard ranking system is described in Table 5: Calculated Priority Risk Index, while the actual ranking is shown in Table 6: Calculated Priority Risk Index Ranking for City of Claremont. Climate Change has significant impact on many of the natural hazards identified. The Planning Team made the decision to address climate change as an element of each hazard, rather than a separate hazard. The frequency and severity of cyber disruptions in and around the Southern California region during 2020-2021 also led the Planning Team to conclude that cyber disruption is a hazard that needed to be profiled and included in the City's mitigation strategies. Table 7: Comparison of 2015 CPRI with 2020 CPRI highlights how the CPRI ranking increased for each natural hazard included in the 2015 LHMP.

Table 5: Calculated Priority Risk Index

CPRI Category	Degree of Risk			Assigned Weighting Factor
	Level ID	Description	Index Value	
Probability	Unlikely	Extremely rare with no documented history of occurrences or events. Annual probability of less than 1 in 1,000 years.	1	45%
	Possibly	Rare occurrences. Annual probability of between 1 in 100 years and 1 in 1,000 years.	2	
	Likely	Occasional occurrences with at least 2 or more documented historic events. Annual probability of between 1 in 10 years and 1 in 100 years.	3	
	Highly Likely	Frequent events with a well-documented history of occurrence. Annual probability of greater than 1 every year.	4	
Magnitude/ Severity	Negligible	Negligible property damages (less than 5% of critical and non-critical facilities and infrastructure. Injuries or illnesses are treatable with first aid and there are no deaths. Negligible loss of quality of life. Shut down of critical public facilities for less than 24 hours.	1	30%
	Limited	Slight property damage (greater than 5% and less than 25% of critical and non-critical facilities and infrastructure). Injuries or illnesses do not result in permanent disability, and there are no deaths. Moderate loss of quality of life. Shut down of critical public facilities for more than 1 day and less than 1 week.	2	
	Critical	Moderate property damage (greater than 25% and less than 50% of critical and non-critical facilities and infrastructure). Injuries or illnesses result in permanent disability and at least 1 death. Shut down of critical public facilities for more than 1 week and less than 1 month.	3	
	Catastrophic	Severe property damage (greater than 50% of critical and non-critical facilities and infrastructure). Injuries and illnesses result in permanent disability and multiple deaths. Shut down of critical public facilities for more than 1 month.	4	
Warning Time	> 24 hours	Population will receive greater than 24 hours of warning.	1	15%
	12–24 hours	Population will receive between 12-24 hours of warning.	2	
	6-12 hours	Population will receive between 6-12 hours of warning.	3	
	< 6 hours	Population will receive less than 6 hours of warning.	4	
Duration	< 6 hours	Disaster event will last less than 6 hours	1	10%
	< 24 hours	Disaster event will last less than 6-24 hours	2	
	< 1 week	Disaster event will last between 24 hours and 1 week.	3	
	> 1 week	Disaster event will last more than 1 week	4	

Source: Federal Emergency Management Agency

Table 6: Calculated Priority Risk Ranking for City of Claremont

Hazard	Probability	Weighted 45% (x.45)	Magnitude Severity	Weighted 30% (x.3)	Warning Time	Weighted 15% (x.15)	Duration	Weighted 10% (x.1)	CPRI Ranking
Cyber Disruption	2.7	1.2	2.2	0.7	3.3	0.5	3.3	0.3	2.68
Drought	2.7	1.2	1.3	0.4	1.0	0.2	4.0	0.4	2.15
Earthquake	3.3	1.5	3.8	1.2	4.0	0.6	3.8	0.4	3.63
Flood	2.2	1.0	2.3	0.7	3.5	0.5	3.5	0.4	2.55
Landslide	2.5	1.1	2.0	0.6	3.8	0.6	3.3	0.3	2.63
Wildfire	3.3	1.5	3.3	1.0	3.9	0.6	3.8	0.4	3.47
Windstorm	3.5	1.6	2.3	0.7	3.1	0.5	3.2	0.3	3.05

Comparison of Prior CPRI

The CPRI ranking increased for each natural hazard included in the 2015 LHMP.

Table 7: Comparison of 2015 CPRI with 2020 CPRI

Hazard	2015 CPRI Ranking	2020 CPRI Ranking
Earthquake	2.95	3.63
Flood	2.05	2.55
Landslide	2.20	2.63
Wildfire	3.15	3.47
Windstorm	2.00	3.05

Profiling Hazard Events

Identifying the causes and characteristics of each hazard increases the understanding of which of the City's facilities, infrastructure, and environment may be vulnerable. A profile of each hazard is provided in the Hazard-Specific Analysis in the following sections.

Table 8: Vulnerability Analysis for City of Claremont

Vulnerability: Location, Extent, and Probability for City of Claremont			
Hazard	**Location (Where)**	**Extent (How Big an Event)**	**Probability (How Often)***
Cyber Disruption	Throughout Project Area	Anywhere within the City but will generally be targeted towards government organizations or larger corporations	**Moderate - High**
Drought	Entire Project Area	Moderate to Severe Drought	**High**
Earthquake	Entire Project Area	The Southern California Earthquake Center (SCEC) in 2007 concluded that there is a 99.7 % probability that an earthquake of M6.7 or greater will hit California within 30 years.[1]	**Moderate**
Flood	Throughout Project Area	Urban Flooding from Severe Weather or Dam Inundation	**Moderate**
Landslide	Throughout the Project Area	Earthquake-induced and rain-induced landslide events possibly impacting dozens of structures.	**Moderate**
Wildfire	Northern quadrants of the City	Severe FRAP Ratings	**High**
Windstorm	Entire Project Area	50 miles per hour or greater	**Moderate**
*** Probability is defined as: Low = 1:1,000 years, Moderate = 1:100 years, High = 1:10 years**			
[1] Uniform California Earthquake Rupture Forecast			

Impact Assessment/Assessing Vulnerability

The impact assessment determines the exposure to each hazard by overlaying hazard maps with an inventory of the existing (or planned) property development(s) and population(s). Critical facilities are of particular concern because these locations provide essential equipment or provide services to the general public that are necessary to preserve important public safety, emergency response, and/or disaster recovery functions.

Risk analysis involves estimating potential losses involves assessing the damage, injuries, and financial costs likely to be sustained in a geographic area over a given period of time. The two measurable components of risk analysis are magnitude of the harm that may result and the likelihood of the harm occurring. Describing vulnerability in terms of dollar losses provides the community and the state with a common framework in which

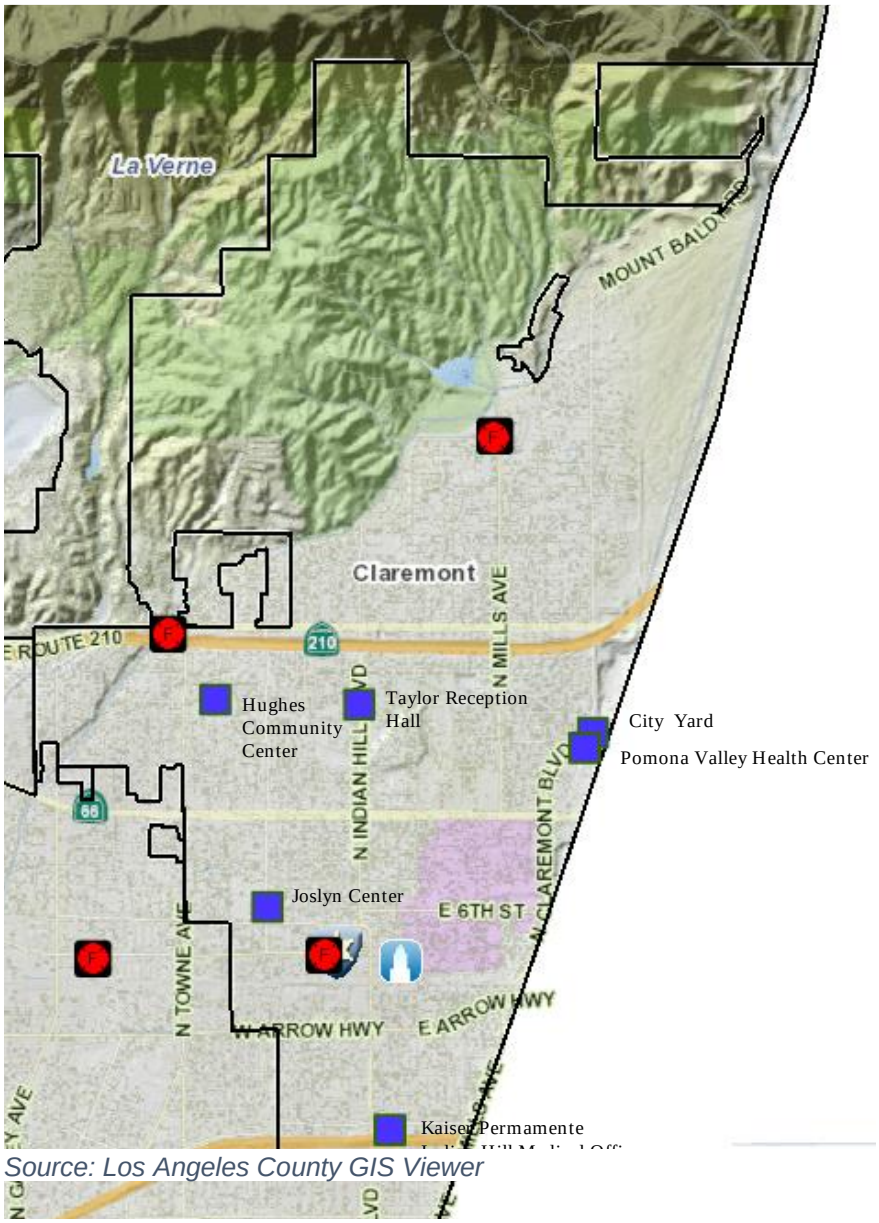
to measure the effects of hazards on assets. For each hazard where data was available, quantitative estimates for potential losses have been included in the hazard assessment. Data was not available to make vulnerability determinations in terms of dollar losses for all the identified hazards.

Critical and Essential Facilities

Facilities critical to government response activities (i.e., life safety and property and environmental protection) include: local government 9-1-1 dispatch centers, local government emergency operations centers, local police and fire stations, local public works facilities, local communications centers, schools, and hospitals.

Essential facilities are those facilities that are vital to the continued delivery of key City services or that may significantly impact the City's ability to recover from the disaster. These facilities include but are not limited to: schools, jails, law enforcement center, public services building, community corrections center, the courthouse, juvenile services building and other public facilities.

Figure 2: Map of Critical and Essential Facilities



Source: Los Angeles County GIS Viewer

Table 9: Critical and Essential Facilities Vulnerable to Hazards illustrates the critical and essential facilities within City of Claremont and the vulnerability of those facilities to the identified hazards.

Table 9: Critical and Essential Facilities Vulnerable to Hazards

Name of Facility	Cyber Disruption	Drought	Earthquake	Flood	Landslide	Wildfire	Windstorm
Critical Facilities							
City Hall 207 N. Harvard Avenue	X		X				X
Claremont Police Department 570 W. Bonita Avenue	X		X				X
County of Los Angeles Fire Station #101 660 W. Bonita Avenue	X		X				X
County of Los Angeles Fire Station #102 2040 N. Sumner Avenue	X		X			X	X
County of Los Angeles Fire Station #62 3701 N. Mills Avenue	X		X			X	X
City Yard 1615 Monte Vista Avenue	X		X				X
Essential Facilities							
Alexander Hughes Community Center 1700 Danbury Road	X		X				X
Taylor Reception Hall 1775 Indian Hill Blvd	X		X				X
Pomona Valley Health Center at Claremont 1601 Monte Vista Avenue	X		X				X
Kaiser Permanente Indian Hill Medical Offices 250 W San Jose Avenue	X		X				X
Joslyn Senior Center 660 N Mountain Avenue	X		X				X

Land and Development

The City of Claremont General Plan provides the framework for the growth and development of the City including the use and development of private land, including residential, industrial and commercial areas, as demonstrated in the Land Use Plan Map below. This Plan is one of the City's most important tools in addressing environmental challenges including transportation and air quality; growth management; conservation of natural resources; clean water and open spaces. The City is currently updating their General Plan and it will include a Climate Adaption section.

Impacts to Types of Structures

The City's General Plan identifies a broad range of land uses and the building code identifies several building types. In general terms, structures are categorized as residential, commercial, institutional, or public.

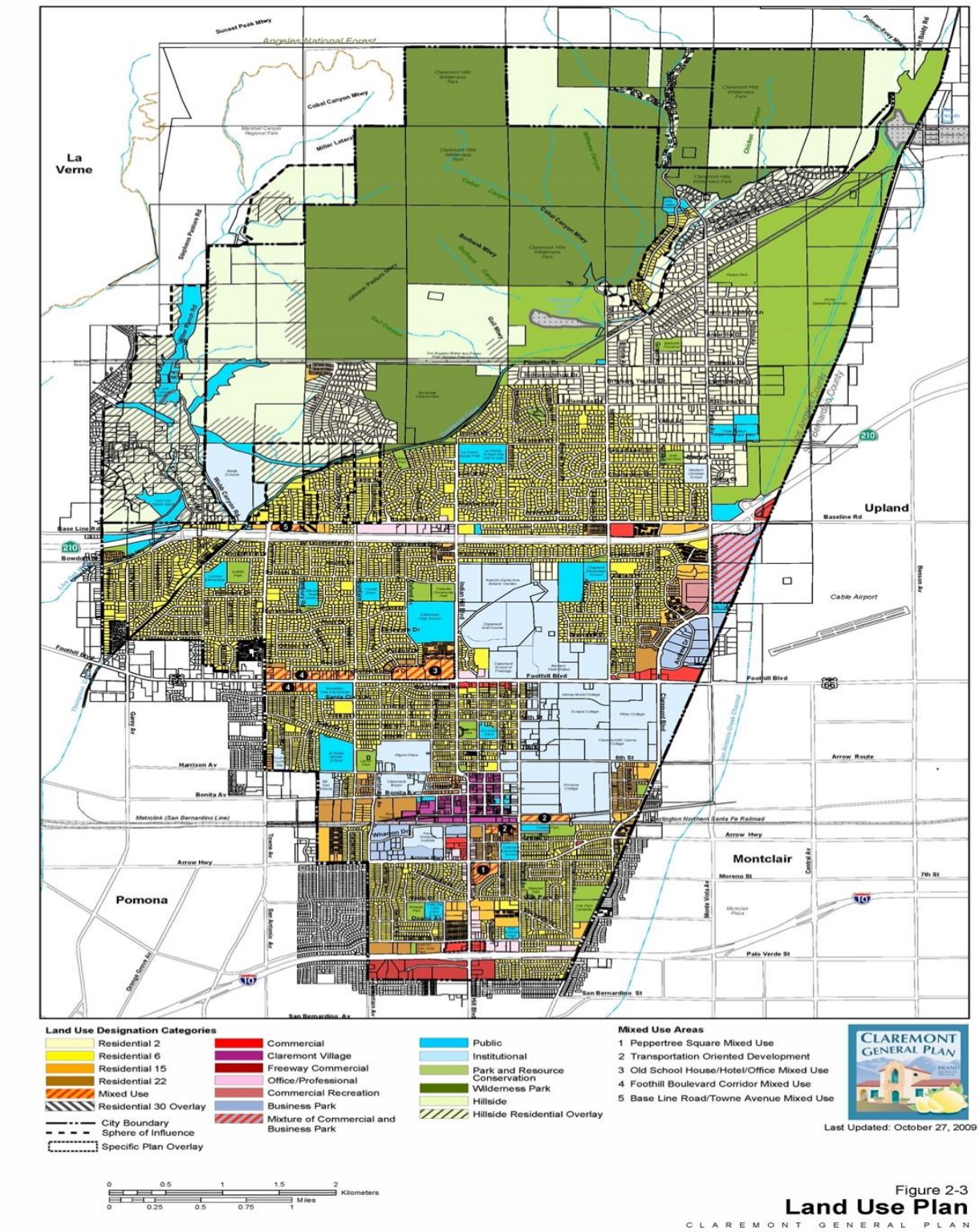
Table 10: Impacts to Existing and Future Types of Structures in the City

Category of Structure	Cyber Disruption	Drought	Earthquake	Flood	Landslide	Wildfire	Windstorm
Residential			X			X	X
Commercial			X		X	X	X
Institutional			X			X	X
Public			X		X	X	X

Source: Analysis Based on City of Claremont General Plan

Land Use Plan Map

Figure 3: Land Use Plan Map



Source: City of Claremont General Plan 2009 Summary

Claremont is vulnerable to the following natural hazards: earthquake, wildfire, windstorm, flood, drought, and landslide. Additionally, the City is vulnerable to other hazards of civil unrest, cyber disruption and pandemic/epidemic events. Because of the frequency and severity of cyber disruptions in and around the Southern California region during 2020-2021, cyber disruption is included in the hazard profiles and included in the City's mitigation strategies, along with the natural hazard. Climate change will have a significant impact on the severity, extent, frequency and length of duration for many hazards.

Hazard mitigation strategies can reduce the impacts concentrated at large employment and industrial centers, public infrastructure, and critical facilities. Hazard mitigation for industries and employers may include developing relationships with emergency management services and their employees before disaster strikes and establishing mitigation strategies together. Collaboration among the public and private sector to create mitigation plans and actions can reduce the impacts of hazards.

Hazard: Cyber Disruption

Hazard Description

A cyber disruption is a circumstance or event with the potential to exploit vulnerabilities and to adversely impact organizational operations, organizational assets (including information and information systems), individuals, other organizations, or society. A system compromise can impact one or more City agencies, a private utility, or specific critical infrastructure such as the power grid, public transportation systems, and wireless networks.

Cyber-attacks may be carried out by a variety of perpetrators, which may be external or internal to the organization. External threats originate outside of established networks and are perpetrated by groups such as organized crime, nation-state or state-affiliated entities, unaffiliated individuals, activists, former employees, acquaintances, competitors, or customers. Internal threats originate from users who have existing access to an internal network, such as employees and system administrators. Examples of cyber threats include malware and hacking, phishing, denial of service attacks, ransomware, and state-sponsored hacking. Any one of these threats, if successful, can produce a cyber-attack that has major implications throughout the organization.

Location and Extent

A cyber disruption can happen anywhere within the City but will generally be targeted towards government organizations or larger corporations. While the City has not experienced a severe incident related to a cyber-attack, the frequency of cyber-attacks on public and private sector organizations in general, continues to rise.

A cyber-attack has the potential to compromise the digital infrastructure and security of any individual or organization. Such attacks vary in nature and are perpetrated using digital mediums and social engineering. The impact of a cyber-attack may be felt for a few minutes, a few days or have longer term impacts.

Ransomware attacks may demand significant payments with monetary demands in the hundreds of thousands to millions. Even when ransoms go unpaid, cities can face significant costs. For example, the City of Baltimore experienced a ransomware attack in 2019 that cost the city more than $18 million in damages and remediation.

Previous Occurrences

In November 2019, Claremont Unified School District was the target of a ransomware attack that affected their email and internet systems. As a precaution, CUSD shut-off its servers and on-campus internet to prevent the virus from spreading Ultimately, the district engaged a cyber response team and did not pay the ransom. However, the “unplugging” impacted various components of academic life: teachers were forced to adjust their

lesson plans and lost all access to electronic gradebooks, with some grades even disappearing; and various student groups, including the yearbook committee and the newspaper, experienced severe disruptions and delays that led to the cancellation of issues and missed project deadlines.

Probability of Future Cyber Events

The probability of occurrence of cyber-attacks is rapidly increasing, especially with increased reliance on the internet and cloud-based computing. Local governments are increasingly being targeted by cyber criminals. For example, in March 2021, the Azusa Police Department was infiltrated by a hacking group that gained accessed to critical data before demanding that a ransom be paid. When the Azusa Police Department declined to pay, hundreds of sensitive documents, including criminal case files and payroll data were released online. However, the probability of a cyber-attack affecting the City is difficult to calculate given that human behavior is unpredictable.

Climate Change Considerations

While there is little evidence to link climate change to an increase in occurrences of cyber-attacks, the target could be related to persons/groups with issues with individuals or companies they perceive to have effect on the climate (i.e., greenhouse gas producers).

Impact

Many aspects of life in the City – from the delivery of water and electricity, to transportation, life safety, and emergency response – have become deeply reliant on technology. For infrastructure if industries related to utilities, health care, transportation, social services, and telecommunications are targeted.

Impacts that are not quantified, but can be anticipated in future events, include:

- ✓ Disruption of and damage to public infrastructure
- ✓ Significant economic impact (jobs, sales, tax revenue) upon the community

this reason, the impact of a cyber-attack could take many forms.

A cyber incident could affect a system's:

- Confidentiality: protecting a user's private information.
- Integrity: ensuring that data is protected and cannot be altered by unauthorized parties.
- Availability: keeping services running and giving administration access to key networks and controls

Cyber incidents can damage public trust in the institutions that were once considered stable and secure. A cyber incident can have wide-ranging effects on public and private

Summary of Claremont's Vulnerability to Cyber-attack

Cyber-attacks represent a growing threat to cities across America. There is potential for significant losses caused by a cyber disruption or ransomware attack to Claremont.

Hazard: Drought

Hazard Description

Drought is the result of a decline in precipitation over an extended period, typically one or more seasons in length. The primary impact of a drought is the reduction of available water supplies. Droughts can cause harm to natural environments as plants do not get the water that they need to survive. In severe cases, droughts may lead to a human health risk if available water supplies are not sufficient to meet basic needs. Indirectly, drought causes soils to dry out; as a result, the soil is less able to absorb water. When precipitation returns the amount of runoff increases, which can lead to flooding. Dry soil is more susceptible to erosion and landslides because it does not bind together as well. Drought causes many plants in natural areas to dry out, making them more susceptible to pest/diseases and increasing the risk of wildfires.

Location and Extent

All areas of Claremont face the same risk of drought, as droughts are regional events,. It is also possible for communities to experience a "long-distance drought," since many urban areas in California receive water supplies from great distances. If these distant areas experience drought, it may cause water shortages in the urban areas that rely on them. The most common scale for measuring drought conditions is the U.S. Drought Monitor Classification Scheme. This rating system is a synthesis of multiple different scales into a descriptive index, shown in Table 11: U.S. Drought Monitor Classification Scheme.

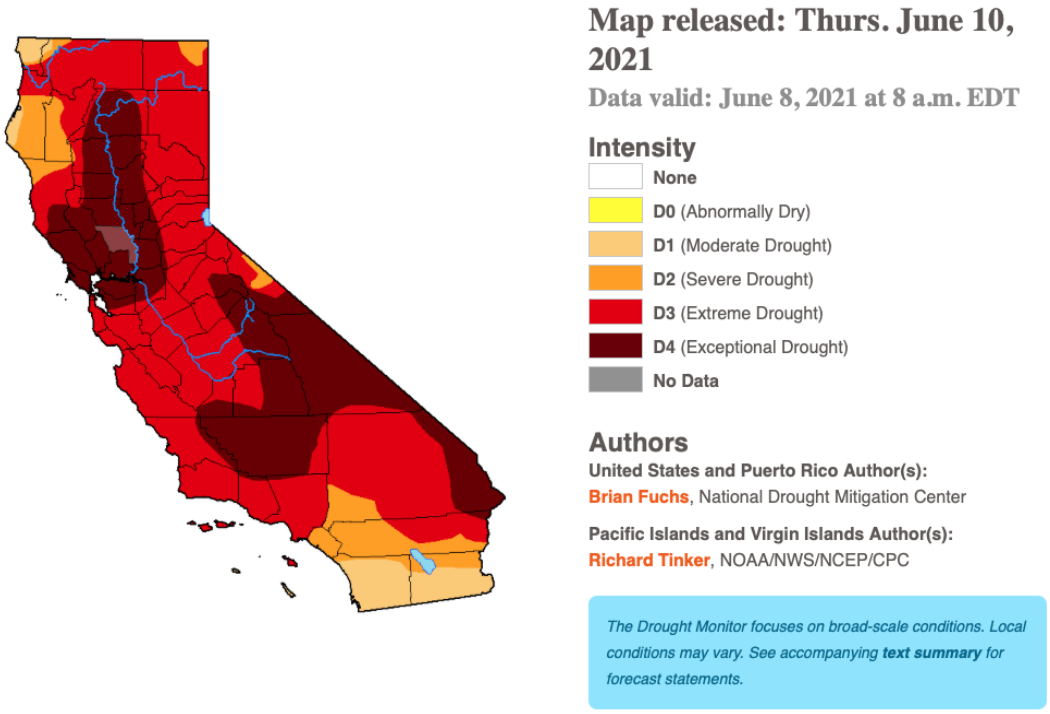
Table 11: U.S. Drought Monitor Classification Scheme

Category	Description	Relevant California-specific possible impacts
D0	Abnormally Dry	• Soil is dry; irrigation delivery begins early • Active fire season begins
D1	Moderate Drought	• Landscaping and gardens need irrigation earlier; wildlife patterns begin to change • Stock ponds and creeks are lower than usual
D2	Severe Drought	• Fire season is longer, with high burn intensity, dry fuels, and large fire spatial extent; more fire crews are on staff • Trees are stressed; plants increase reproductive mechanisms; wildlife diseases increase • River flows decrease; reservoir levels are low and banks are exposed
D3	Extreme Drought	• Fire season lasts year-round; fires occur in typically wet parts of state; burn bans are implemented • Wildlife encroach on developed areas; little native food and water is available for bears, which hibernate less

		• Water sanitation is a concern, reservoir levels drop significantly, surface water is nearly dry, flows are very low; water theft occurs • Water conservation rebate programs increase; water use restrictions are implemented; water transfers increase • Water is inadequate for agriculture, wildlife, and urban needs; reservoirs are extremely low; hydropower is restricted
D4	Exceptional Drought	• Fire season is very costly; number of fires and area burned are extensive • Many recreational activities are affected • Fish rescue and relocation begins; pine beetle infestation occurs; forest mortality is high; wetlands dry up; survival of native plants and animals is low; fewer wildflowers bloom; wildlife death is widespread; algae blooms appear • Poor air quality affects health; greenhouse gas emissions increase as hydropower production decreases; West Nile Virus outbreaks rise • Water shortages are widespread; surface water is depleted; federal irrigation water deliveries are extremely low; junior water rights are curtailed; water prices are extremely high; wells are dry, more and deeper wells are drilled; water quality is poor

Los Angeles County, including Claremont, experienced a drought for 376 consecutive weeks from December 20, 2011, until March 14, 2019. As of June 2021, 85% of the state of California was experiencing an extreme (D3) or exceptional drought (D4) (exceptional drought). Claremont was in a state of D3 (extreme drought).

Figure 4: California Drought Conditions June 2021



Source: U.S. Drought Monitor

Previous Occurrences

Drought is a cyclic part of the climate of California, occurring in both summer and winter, with an average recurrence interval between three and ten years. The National Oceanic an Atmospheric Administration (NOAA) National Centers for Environmental Information (NCEI)[4] estimates that the droughts that California experienced since 2000 have cost between $10-20 billion.

The list below details the droughts California has experienced over the past 50 years.

- 1975-1977, Statewide - California experienced a serious drought due to low precipitation. The drought dramatically lowered reservoir levels across California, leading to widespread water shortages.
- 1987-1992, Statewide - California experienced another serious drought due to low participation and runoff levels.
- 2007-2009, Statewide - In February 2009, the state proclaimed a statewide drought for the first time.
- 2012-2017, Significant - Prolonged Statewide drought.

[4] NOAA National Centers for Environmental Information (NCEI) U.S. Billion-Dollar Weather and Climate Disasters (2021). https://www.ncdc.noaa.gov/billions/, DOI: 10.25921/stkw-7w73

The 2012-2017 drought was one of the most significant droughts in California's history. Governor Brown declared a statewide drought emergency in January 2014 and Californians were asked to voluntarily reduce their water consumption by 20 percent. Drought conditions worsened and in April 2015 the governor announced actions to save water, increase enforcement to prevent wasteful water use, streamline the state's drought response, and invest in new technologies to make California more drought-resilient. The governor directed the State Water Resources Control Board to implement mandatory water reductions in cities and towns across California to reduce water usage by 25 percent on average.

Probability of Future Events

Researchers for California's Fourth Climate Change Assessment have noted that California has a "highly variable climate" with wet or dry periods that can span years and that are "heavily affected by extreme precipitation events." Furthermore, climate scientists also suggest the possibility of longer and more destructive droughts with climate change. As such, California is likely to experience long-term droughts at least every decade.

The Golden State Water Company receives a mixture of local groundwater and imported water from the State Water Project and the Colorado River via the Three Valleys Municipal Water District (part of Metropolitan Water District of Southern California). Groundwater is also resilient to drought because groundwater basins can hold large volumes of water that have built up over an extended time. Groundwater basins are refilled by local precipitation that filters through the ground (a process called recharge).

In most droughts in California, surface water sources can typically supply only a reduced amount of water, and in some cases supply may be depleted entirely. The risk that future drought conditions would substantially affect Claremont is to some degree lessened by the large volume of groundwater in local water supplies. However, a substantial portion of the community's water is imported, and these supplies are more vulnerable to drought. Overall, Claremont may be relatively unaffected by short-term droughts, but longer-term droughts that affect groundwater supplies will have more significant effects.

Climate Change Considerations

Overall, climate change is likely to decrease precipitation levels throughout the state, though there will likely be significant variation in year-to-year rainfall. Although changes to precipitation levels may be unclear, climate change is projected to result in more frequent and severe droughts, partly due to the greater variability in precipitation levels. Warmer temperatures mean that less precipitation will fall as snow, and that any snow that does fall will melt faster. The accumulated snow of the winter (known as snowpack) is a major source of water in California's dry season, but climate change is expected to reduce the water available from this source, particularly at the end of the dry season. Additionally, according to Cal-Adapt, recent research suggests that a mega drought

(extended drought conditions that could persist as long as 20 years) could become more pervasive in future decades.

Impact of Drought on Claremont

Severe droughts can impact the region's agriculture, forests, hydropower, groundwater supply, recreation, aquatic ecosystems, as well as isolated communities that have limited water supply.

Lifelines and Critical Facilities

No structures will be directly affected by drought conditions, though some structures may become vulnerable to wildfires, which are more likely following years of drought.

Natural Environment

The ecosystems in and around Claremont are well adapted to drought conditions, but much more frequent and/or intense drought events may harm these natural environments. In addition to the direct damage to the local ecosystems, this may have economic impacts on the community.

Economic Impact

A prolonged drought can affect a community's economy significantly. Increased demand for water and electricity may result in shortages and higher costs of these resources. Although most businesses will still be operational, they may be affected aesthetically—especially the recreation and tourism industry. Significant economic impact will be largely associated with industries that use water or depend on water for their business. Moreover, droughts within another area could affect food supply and price for City residents.

Non-Quantifiable Impacts

Drought will continue to have potentially negative economic impacts to the City. Impacts that are not quantified, but can be anticipated in future events, include:

- ✓ Economic Impact
- ✓ Water Reduction Policies
- ✓ Secondary Impacts of wildfire

Summary of Claremont's Vulnerability to Drought

Climate scientists predict that Los Angeles County and the rest of Southern California will get drier and northern California will get hotter. The resulting loss of snowpack in the Sierra Nevada will mean less water for all Californians – farmers, residents, utilities, and even hatchery fish. However, while drought cannot be controlled, according to the USGS, drought can be managed in two ways: through drought planning and in helping communities make the best day-to-day management decisions while the drought is taking place.

Hazard: Earthquake

Hazard Description

An earthquake is a sudden motion or trembling that is caused by a release of strain accumulated within or along the edge of the Earth's tectonic plates. Earthquakes usually occur without warning and in certain instances can cause massive damage and extensive casualties. Common effects of earthquakes are ground motion and shaking, surface fault ruptures, and ground failure. The severity of the vibration increases with the amount of energy released and decreases with distance from the causative fault or epicenter. Soft soils can further amplify ground motions. The severity of these effects is dependent on the amount of energy released from the fault or epicenter.

Earthquakes are classified by the amount of energy released, measured as magnitude, and the impact on people and structures, measured as intensity. Magnitude is commonly expressed by ratings on the Richter scale and the Moment Magnitude (Mw) scale; the Mw scale is currently the most commonly used magnitude scale. Earthquake intensity is measured with the Modified Mercalli Intensity Scale, which measures felt intensity, and peak ground acceleration (PGA), which expresses the severity of an earthquake and is a measure of how hard the earth shakes, or accelerates, in a given geographic area.

Earthquake Related Hazards

In addition to ground shaking, secondary hazards associated with earthquakes are landslides and liquefaction. The severity of these hazards depend on several factors, including soil and slope conditions, proximity to the fault and earthquake magnitude.

Landslides

Earthquake-induced landslides occur as a result of the ground shaking. Generally, these consist of rock falls, disrupted soil slides, rock slides, soil lateral spreads, soil slumps, soil block slides, and soil avalanches. Areas having the potential for earthquake-induced landslides generally occur in areas of previous landslide movement.

Liquefaction

Liquefaction is a phenomenon in which loose, wet soil is suddenly shaken, causing the soil to behave more like a fluid and lose its stability. Liquefaction occurs in saturated soils – soils in which the space between individual soil particles is completely filled with water. The water exerts a pressure on the soil particles which influences how tightly the particles themselves are pressed together. Prior to an earthquake, water pressure may be relatively low but earthquake shaking can cause the water pressure to increase to the point where the soil particles can readily move with respect to each other. Because liquefaction only occurs in saturated soil, its effects are most commonly observed in low lying areas. Typically, liquefaction is associated with shallow groundwater, water less than 50 feet beneath the earth’s surface.

Liquefied soil loses much or all of its stability, which results in the loss of soil strength and the soil's ability to support weight. Buildings and their occupants are at risk when the ground can no longer support these structures. Structures located on soils such as silt or sand may experience significant damage during an earthquake due to the instability of structural foundations and the moving earth.

Location and Extent

The City of Claremont lies within a metropolitan area that has historically been seismically active. Faults are prevalent throughout California and are commonly classified as either “active” or “potentially active.” An active fault is a break that has moved in recent geologic time (the last 11,000 years) and that is likely to move within the next approximately 100 years. Active faults are the primary focus of concern in attempting to prevent earthquake hazards.

Several active faults have been identified within or adjacent to the boundaries of the Claremont Planning Area, which indicates that the community falls under the Alquist-Priolo Earthquake Fault Zoning Act of 1972 and the Seismic Hazards Mapping Act of 1990. These acts require that during the General Plan update process local governments must adopt policies and criteria to ensure the structural adequacy of buildings erected across active faults for human occupancy and identify areas prone to liquefaction and amplified ground shaking. In some cases, the development of structures is prohibited. Verification that the above acts pertain to Claremont was obtained through correspondence with the State Department of Conservation and is on file with the City Planning Division.

Historic patterns show that any of the minor or major faults traversing the Southern California region are capable of causing significant disruption. Despite the fact that Claremont faces limited threats from interior seismicity, there are a number of active faults in Southern California that could potentially move and thus result in hazards to the community.

Earthquakes that could affect the City would most likely originate from the Sierra Madre, Whittier, San Jose or San Andreas Fault Zones. These faults are close enough in proximity or expected to generate strong enough shaking that could affect the City. The level of seismicity in Claremont, both as to maximum credible earthquake intensity and likely earthquake occurrences, is considered to be approximately the same as for the Los Angeles Basin.

- **Sierra Madre**: The Sierra Madre fault runs along the southern margin of the San Gabriel Mountains and is related to the Cucamonga Fault to the east and San Fernando Fault Zone to the west.

- **Whittier**: The Whittier fault runs approximately 40 kilometers between the cities of Chino Hills and Whittier and is one of the two upper branches of the Elsinore Fault Zone. An earthquake with a magnitude M 5.44 was recorded in 2008.

- **San Jose:** The San Jose fault runs for approximately 18 kilometers in the ares of Claremont and Pomona. Two earthquakes each of magnitude greater than 5.0 were recorded in 1988 and 1990.

- **San Andreas**: The San Andreas Fault is the longest and most significant fault in California. Because of clearly established historical earthquake activity, this fault has been designated as active by the State of California. The last major earthquake on this fault in the region was the Fort Tejon earthquake of 1857, which was estimated at M 8.0 and would have caused considerable damage if there had been structures in the southern part of the county.

Although there are several faults within the vicinity of the City, Claremont has never been severely impacted by an earthquake.

Figure 5: Map of Fault Lines in the Vicinity of Claremont



Source: Los Angeles County GIS Viewer

Landslides

Landslides can destroy the roads, buildings, utilities, and other critical facilities necessary to respond and recover from an earthquake. Many communities in Southern California have a high likelihood of encountering such risks, especially in areas with steep slopes.

As a hillside community, Claremont is at-risk for landslides along the foothills of the San Gabriel Mountains. Areas considered for earthquake-induced landslides are generally found in the Hill and Canyon area of the City and are shown on the Maps depicting Landslide and Liquefaction Zones in Claremont (Figures 6 and 7). The landslide potential zones were compiled from USGS. Mapped earthquake-induced landslide potential zones are intended to prompt more detailed, site specific geotechnical studies as required by the Seismic Hazard Mapping Act.

Liquefaction

Many communities in Southern California are built on ancient river bottoms and have sandy soil. In some cases, this ground may be subject to liquefaction, depending on the depth of the water table.

Liquefaction has been a major cause of earthquake damage in Southern California. During the 1971 San Fernando and 1994 Northridge earthquakes, significant damage to roads, utility pipelines, buildings, and other structures in the Los Angeles area were caused by liquefaction. Research and historical data indicate that loose, granular materials situated at depths of less than 50 feet with fines (silt and clay) contents of less than 30 percent, which are saturated by a relatively shallow groundwater table are most susceptible to liquefaction. These geological and groundwater conditions exist in parts of Southern California and Claremont, typically in valley regions and alleviated floodplains.

For liquefaction to occur, three general conditions must be met. The first condition – strong ground shaking of relatively long duration – can be expected to occur in the Claremont area as a result of an earthquake on any of the several active faults in the region. The second condition – loose, or unconsolidated, recently deposited sediments consisting primarily of silt and sand – occurs in a large portion of the valley floors, and in the larger canyon bottoms prevalent throughout Los Angeles County. The third condition is water saturated sediments within approximately 50 feet of the surface.

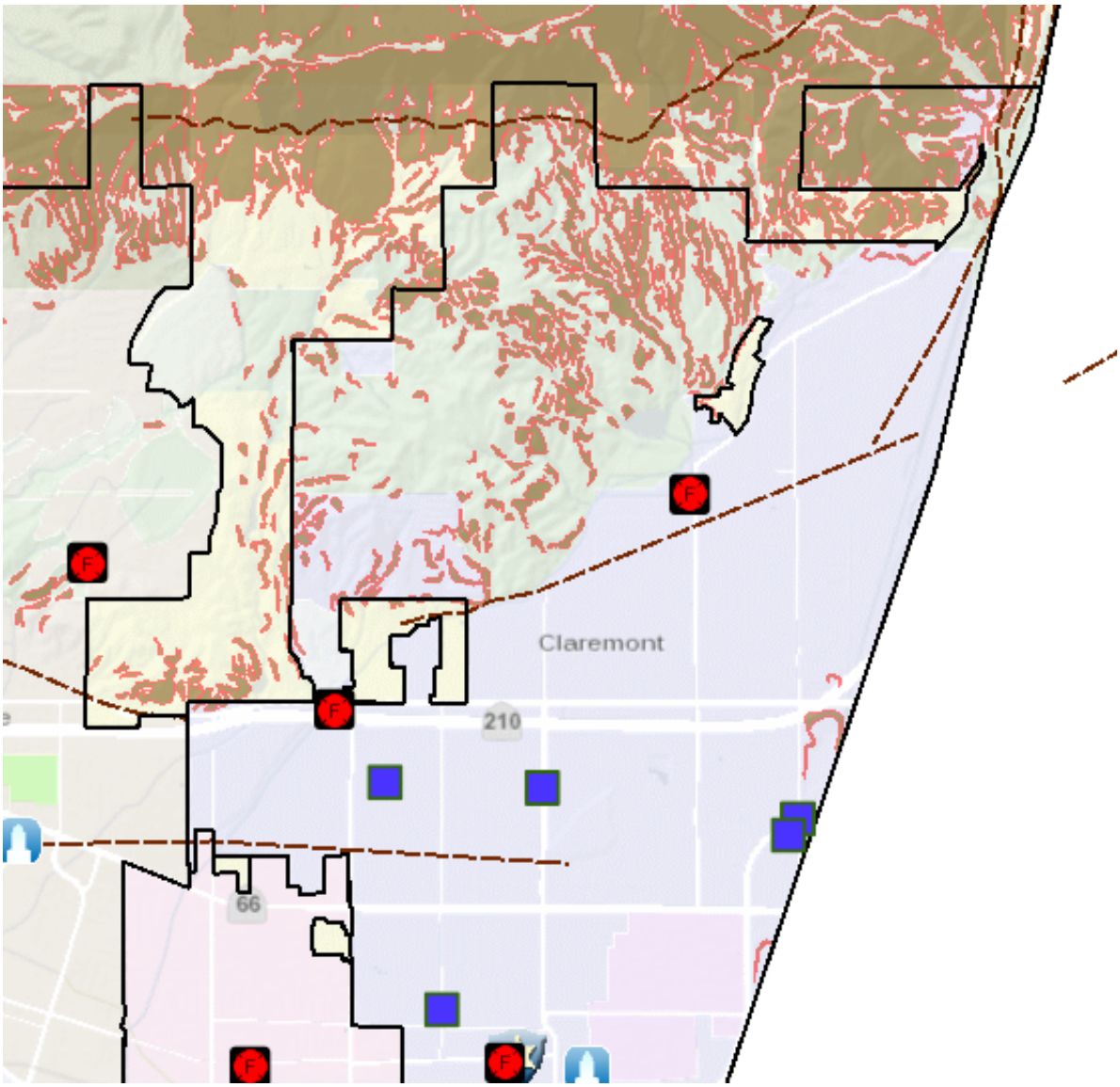
In the City of Claremont, the groundwater table (used to determine the risk of liquefaction) is generally more than 100 feet below the surface, except in a few areas where clay lenses exist. This results in a lack of groundwater near the surface, leaving much of the City in a low liquefaction-risk area. Additionally, the alluvial soils upon which Claremont is built facilitate liquefaction prevention.

However, there are two areas within Claremont that are identified as Liquefaction Zones. Area 1 starts just north of Foothill Boulevard, going down to just south of Harrison Avenue, and lies east of Baughman Drive and west of College Avenue. There are two parks, Sycamore Elementary School, Claremont School of Theology, Pilgrim Place, approximately 300 homes and two business/shopping centers within or bordering Area 1.

Area 2 starts just North of Scripps Drive, sloping northwest across Thompson Creek into County-run areas. On the east side it is bordered by Thompson Creek and is a half block west of Mountain Avenue on the southwest side. Fire Station #101, Webb School, Sunrise Assisted Living Center, a Water Reservoir, a Power Station, the 210 Freeway, Thompson Creek, and approximately 200 homes are within or border Area 2.

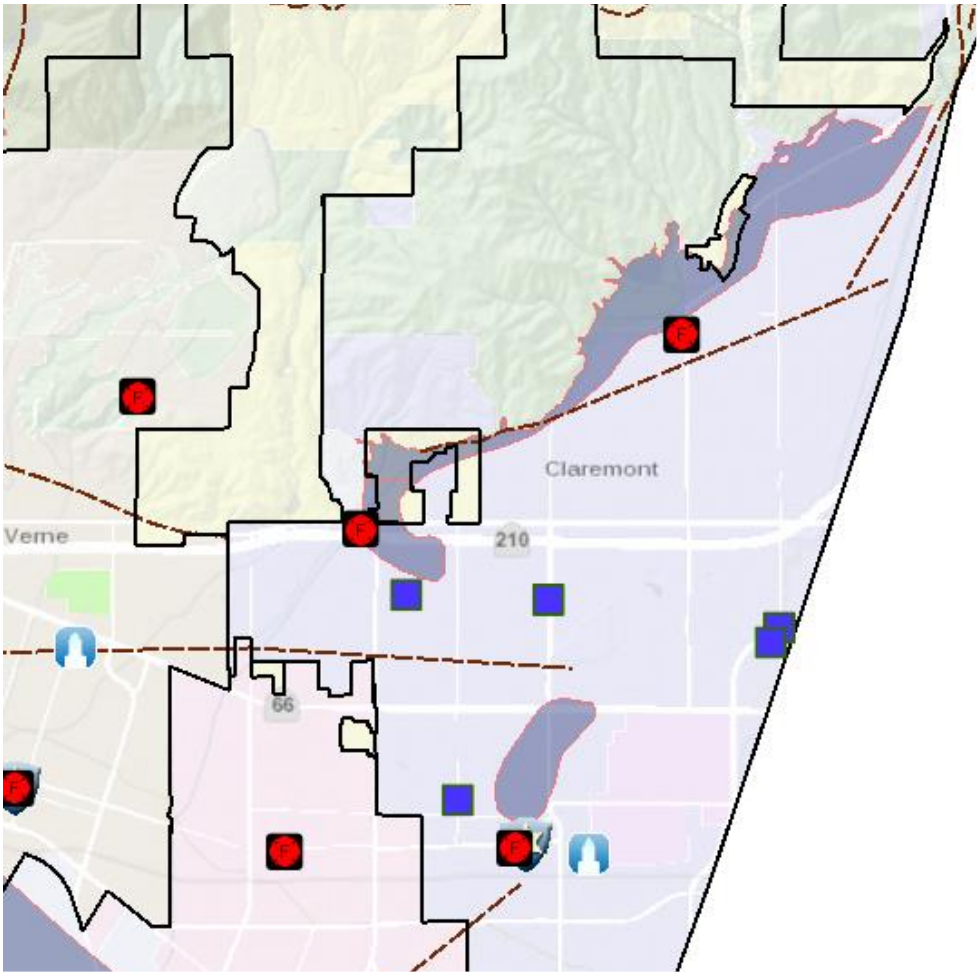
In accordance with the Seismic Hazard Mapping Act, the California Division of Mines and Geology has evaluated liquefaction susceptibility for most of the Claremont area. Figure 6: Landslide Zones in Claremont and Figure 7: Liquefaction Zones in Claremont show the results of these studies.

Figure 6: Landslide Zones in Claremont



Source: Los Angeles County GIS Viewer

Figure 7: Liquefaction Zones in Claremont



Source: Los Angeles County GIS Viewer

Previous Occurrences

Southern California has a history of powerful and relatively frequent earthquakes, dating back to the powerful magnitude 8.0+ 1857 San Andreas Earthquake which did substantial damage to the relatively few buildings that existed at the time. During the twentieth century, many earthquakes have shaken Claremont. Notable events that affected wide areas of Southern California include the 1933 Long Beach, 1971 Sylmar, and 1987 Whittier earthquakes. In 1992, Claremont was shaken by two events: a M 7.3 earthquake originating from the desert community of Landers and a M 6.4 in Big Bear. The Northridge tremor of 1994 rattled windows and nerves throughout the City, but Claremont was spared the widespread destruction experienced in the San Fernando Valley. In 1988 and 1990, earthquakes with a magnitude of 5.5 centered in Claremont caused minor structural damages. In 1994, the region experienced the M 6.7 Northridge earthquake. In 2019, Ridgecrest, approximately 100 miles north of Claremont, experienced a M 6.4 earthquake followed two days later by a M 7.1 earthquake, the largest experienced in the region since 1952.

Historically, the City of Claremont has generally been spared a major destructive earthquake. However, based on a search of earthquake databases of the United States Geological Survey (USGS) - National Earthquake Information Center (NEIC), several major earthquakes (Magnitude 6.0 or more) have been recorded within approximately 100 kilometers of the project area since 1769.

Probability of Future Events

The 2007 Working Group on California Earthquake Probabilities (WGCEP 2007), a multi-disciplinary collaboration of scientists and engineers, released the Uniform California Earthquake Rupture Forecast (UCERF), the first comprehensive framework for comparing earthquake possibilities throughout all of California, in 2007. In developing the UCERF, the 2007 Working Group revised earlier forecasts for Southern California (WGCEP 1995) and the San Francisco Bay Area (WGCEP 2003) by incorporating new data on active faults and an improved scientific understanding of how faults rupture to produce large earthquakes. It extended the forecast across the entire state using a uniform methodology, allowing for the first time, meaningful comparisons of earthquake probabilities in urbanized areas such as Los Angeles and San Francisco Bay Area, as well as comparisons among the large faults in different parts of the State. The study was organized by the Southern California Earthquake Center, the U.S. Geological Survey, and the California Geological Survey, and it received major support from the California Earthquake Authority, which is responsible for setting earthquake insurance rates statewide. In 2015, the latest version, the forecast was updated and according to the UCERF (Version 3)[5], the probability of an earthquake of magnitude 6.7 or larger in the Los Angeles area over the next 25 years is 60%.

Climate Change Considerations

There is no evidence of any link between climate change and seismic activity that could affect conditions in Claremont. Climate change is not expected to cause any changes to the frequency or severity of earthquake events.

Impact of Earthquake on Claremont

A significant earthquake along one of the major faults could result in substantial casualties, extensive damage to buildings, roads and bridges, fires, dam failure and other threats to life and property. A major earthquake could be catastrophic in its effect on the population. Such an earthquake could exceed the response capabilities of the individual cities, Los Angeles County Operational Area, and the State of California Emergency Management Agency. Support of damage control and disaster relief could be required from other local governments and private organizations, as well as the state and federal governments.

[5] https://pubs.usgs.gov/fs/2015/3009/pdf/fs2015-3009.pdf

Emergency operations could be seriously hampered by the loss of communications and damage to transportation routes within, and to and from, the disaster area and by the disruption of public utilities and services. Extensive search and rescue operations could be required to assist trapped persons. Mass evacuation could be essential to save lives, particularly in areas downwind from hazardous material releases. Emergency medical care, food, and temporary shelter could be required by injured or displaced persons.

Many families could be separated, particularly if the earthquake occurs during working hours. A personal inquiry or locator system could be essential to maintain morale. Emergency operations could be seriously hampered by a loss of communications, damage to transportation routes, and/or disruption of public utilities and services.

The economic impact on the City from a major earthquake would be considerable in terms of loss of employment and loss of tax base. Also, a major earthquake could cause serious damage and/or outage to critical infrastructure. The loss of such facilities could curtail or seriously disrupt the operations of banks, insurance companies, and other elements of the financial community. In turn, this could affect the ability of local government, business and the population to make payments and purchases.

Extensive federal assistance could be required and could continue for an extended period. Efforts would be required to remove debris and clear roadways, demolish unsafe structures, assist in reestablishing public services and utilities, and provide continuing care and welfare for the affected population, including temporary housing for displaced persons.

The time of day and season of the year would have a profound impact on the number of dead and injured. In general, the population is less at risk during non-work hours (if at home) as wood-frame structures are relatively less vulnerable to major structural damage than are typical commercial and industrial buildings. Transportation problems are intensified if an earthquake occurs during work hours, as significant numbers of employees would be stranded in the City. An earthquake occurring during work hours would clearly create major transportation problems for those displaced workers.

Historical Impact: Northridge Earthquake

The most recent significant earthquake event affecting Southern California was the January 17, 1994 Northridge Earthquake. At 4:31 A.M. on Monday, January 17, a moderate but very damaging earthquake with a magnitude of 6.7 struck the San Fernando Valley. In the following days and weeks, thousands of aftershocks occurred, causing additional damage to affected structures.

Fifty-seven people were killed and more than 1,500 people seriously injured. For days afterward, thousands of homes and businesses were without electricity; tens of thousands had no gas; and nearly 50,000 had little or no water. Approximately 15,000 structures were moderately to severely damaged, which left thousands of people temporarily homeless; 66,500 buildings were inspected. Nearly 4,000 were severely damaged and over 11,000 were moderately damaged. Several collapsed bridges and overpasses created commuter havoc on the freeway system. Extensive damage was caused by ground shaking, but earthquake triggered liquefaction and dozens of fires also caused additional severe damage. This extremely strong ground motion in large portions of Los Angeles County resulted in record economic losses.

Structure Failure

A substantial amount of construction has occurred in Claremont under design standards that take into account some of the lessons learned from the 1971 Sylmar earthquake. Because most of the structures and infrastructure in Claremont have recently been built under modern building codes, it is possible to survive the maximum expected earthquake with relatively moderate losses. Possible geologic effects of a likely major earthquake in Claremont include:

- Rupture of the ground surface associated directly with movement on geologic faults. The likelihood of an event such as this is prevalent; however it would be focused in the foothill portions of the City, which are not as densely populated as the alluvial portions.
- Ground failure due to liquefaction (a momentary quick condition, similar to quicksand) could occur in Claremont wherever the right combination of perched water and low density, sandy material exists. Liquefaction conditions may occur in areas along the canyon and wash areas located at the base of the foothills and in isolated areas.
- Ground shaking with moderate to high lateral accelerations would be the primary seismic effect in the City.
- In general, complete collapse of buildings is not likely to occur and building damage is likely to be only moderate. However, partial to total collapse could occur among the very few pre-1933 buildings still existing, and partial collapse of some tilt-up and concrete block buildings built prior to March 1972 must be counted as a possibility, based on the evidence of the Sylmar earthquake. The majority of

construction has been under modern building codes. Where current state-of-the-art seismic evaluations can enter into all future development, and where disaster preparedness is being maintained, it is possible to survive the maximum expected earthquake with relatively moderate losses.

Nonquantifiable Impacts

It is evident that earthquakes will continue to have potentially devastating impacts to certain areas of the City. Impacts that are not quantified, but can be anticipated in future events, include:

- ✓ Injury and loss of life;
- ✓ Commercial and residential structural damage;
- ✓ Disruption of and damage to public infrastructure;
- ✓ Damage to roads/bridges resulting in loss of mobility;
- ✓ Significant economic impact (jobs, sales, tax revenue) upon the community;
- ✓ Negative impact on commercial and residential property values; and
- ✓ Significant disruption to students and teachers as temporary facilities and relocations would likely be needed.

Summary of Claremont's Vulnerability to Earthquakes

The impacts of a high magnitude earthquake can span a large area; a large earthquake occurring in Southern California region could possibly be felt throughout the region. However, the degree to which the earthquakes are felt, and the damages associated with them, may vary. At risk from earthquake damage are large stocks of old buildings and bridges: many high tech and hazardous materials facilities: extensive sewer, water, and natural gas pipelines; earth dams; petroleum pipelines; and other critical facilities and private property located in the county. The relative or secondary earthquake hazards, which are liquefaction, ground shaking, and earthquake-induced landslides, can be just as devastating as the earthquake.

Hazard: Flood

Hazard Description

A flood occurs when the existing channel of a stream, river, canyon, or other watercourse cannot contain excess runoff from rainfall or snowmelt, resulting in overflow onto adjacent lands.

Floods usually occur during the season of highest precipitation or during heavy rainfalls after prolonged dry periods. The City is dry during the late spring, summer, and early fall, and receives most of its rain during the winter months. The rainfall season extends from November through April, with approximately 95% of the annual rainfall occurring during this period. The City averages 17 inches of precipitation per year.

Over the last 140 years, the average annual rainfall in Los Angeles County has been approximately 15 inches, though the annual rainfall during this time period has varied widely. For example, the 2006-2007 season recorded only 3.21 inches of rainfall, and the 2004-2005 recorded 37.25 inches. The City of Claremont is in the eastern section of the Los Angeles Basin (or San Gabriel Valley), against the San Gabriel Mountains, which increases the collection of rainwater.

Floods are dangerous for a number of reasons. Moving water is very strong; it can damage buildings and/or carry large debris that damages objects in its path. Moving water can wash away soil, weakening structures and potentially leading to partial or complete collapse. There is no single type of flood or one area most prone to flooding.

Urban Flooding

As land is converted from fields or woodlands to roads and parking lots, it loses its ability to absorb rainfall. Urbanization of a watershed changes the hydrologic systems of the basin. Heavy rainfall collects and flows faster on impervious concrete and asphalt surfaces. The water moves from the clouds, to the ground, and into streams at a much faster rate in urban areas. Adding these elements to the hydrological systems can result in flood waters that rise very rapidly and peak with violent force.

Riverine Flooding

Riverine flooding is the overbank flooding of rivers and streams. The natural processes of riverine flooding add sediment and nutrients to fertile floodplain areas. Flooding in large river systems typically results from large-scale weather systems that generate prolonged rainfall over a wide geographic area, causing flooding in hundreds of smaller streams, which then drain into the major rivers. Shallow area flooding is a special type of riverine flooding. FEMA defines shallow flood hazards as areas that are inundated by the 100-year flood with flood depths of only one to three feet. These areas are generally flooded by low velocity sheet flows of water.

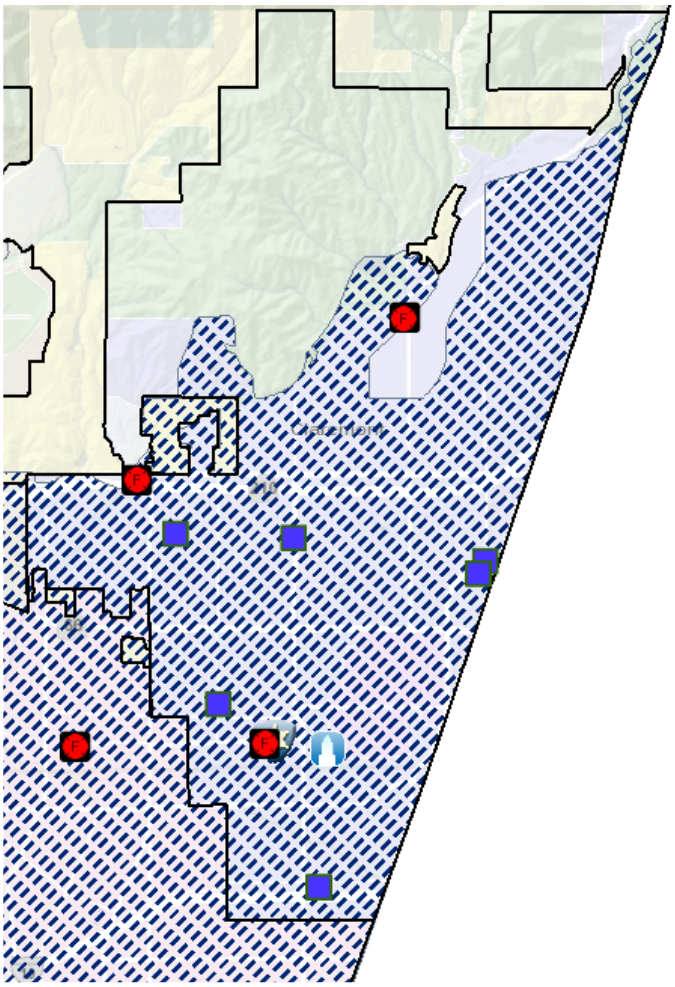
Location and Extent

The size and frequency of a flood in a particular area, depends on a complex combination of conditions, including the amount, intensity, and distribution of rainfall previous moisture condition and drainage patterns.

The magnitude of a flood is measured in terms of its peak discharge, which is the maximum volume of water passing a point along a channel in a given amount of time, usually expressed in cubic feet per second (cfs). Floods are usually referred to in terms of their chance of occurrence. For example, a 100-year flood has a 1% chance of occurring in any given year.

FEMA establishes base flood heights and inundation areas for 100-year and 500-year flood zones. The 100-year flood is defined as a flood which has a one percent probability of occurring in any given year (one in 100). The 500-year flood is defined as a flood which has a 0.2 percent probability of occurring in any given year (one in 500). The 100-year zone is the area that is vulnerable to that designated flood.

Figure 9: Map of 500 Year Floodplain



Source: Los Angeles County GIS Viewer

The City of Claremont is vulnerable to both slow-rise and flash flooding. Slow-rise floods in Claremont may be preceded by a warning period of hours or days. Evacuation and sandbagging for slow-rise floods have often effectively lessened flood related damage. Conversely, flash floods are most difficult to prepare for, due to extremely limited, if any, advance warning and preparation time. Slow-rise flooding in Claremont is usually the result of one or a combination of the following factors: extremely heavy rainfall, saturated soil, area recently burned in wildfires with inadequate new ground cover growth, or heavy rainfall with runoff from melting mountain snow.

The City of Claremont is adjacent to three rivers that make the City susceptible to flooding events: San Antonio River, Thompson Creek Channel, and Chicken Creek. The largest threat to flooding in Claremont comes from dam inundation. There is also the risk of urban flooding resulting from heavy rainfall.

Dam Inundation

According to the City of Claremont SEMS Multi-Hazard Functional Plan, there are three dams or reservoirs in or near the City of Claremont with a total capacity of 9922 acre-feet of water or 3.2 billion gallons of water (1 acre-foot=325,851 gallons).

There are two dams that are owned by the Los Angeles County Department of Public Works, both are in satisfactory condition:

- Thompson Creek Dam, built in 1928
- Live Oak Dam, built in 1922

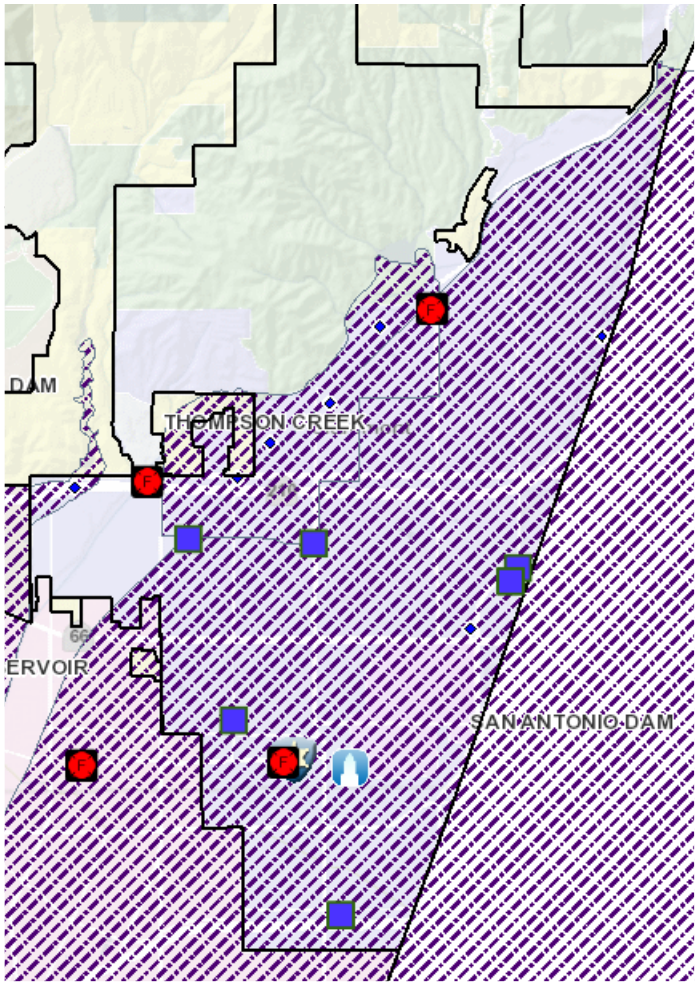
Both dams have a classified “high” downstream hazard, meaning the potential downstream impact to life and property would be “expected to cause loss of at least one human life.” However, as they have been classified in satisfactory condition, as defined by the National Inventory of Dams, the definition used by the California Division of Safety of Dams, they are not eligible for FEMA’s Rehabilitation of High Hazard Potential Dams (HHPD) program. Satisfactory condition means that there is “no existing or potential dam safety deficiencies are recognized. Acceptable performance is expected under all loading conditions (static, hydrologic, seismic) in accordance with the applicable regulatory criteria or tolerable risk guidelines.”

The San Antonio Dam is federally owned and was built in 1956. Based on a 2014 risk assessment conducted by the Army Core of Engineers, the incremental risk of the San Antonio Dam is considered to be low. As a federally owned dam, the San Antonio Dam is also ineligible for the FEMA HHPD program.

Because dam failure can have severe consequences, FEMA requires that all dam owners develop Emergency Action Plans (EAP) for warning, evacuation, and post-flood actions. Although there may be coordination with county officials in the development of the EAP, the responsibility for developing potential flood inundation maps and facilitation of emergency response is the responsibility of the dam owner.

In the case of dam inundation, the areas affected would extend over a large area (south to the I-10 and west to White Avenue in La Verne in the case of the San Antonio Dam), or a smaller area (Foothills area of the City and south of just south of Base Line Road in the case of the Thompson Creek Dam and a small area in Western Claremont in the case of the Live Oak Dam). For more detailed information regarding dam failure flooding, and potential flood inundation zones for a particular dam in the county, refer to the City of Claremont SEMS Multi-Hazard Functional Plan.

Figure 10: Dam Inundation Areas



Source: Los Angeles County GIS Viewer

Urban Flooding

Almost 25% of the area in the City has a high concentration of impermeable surfaces that either collect water or concentrate the flow of water in unnatural channels. During periods of urban flooding, streets can become swift moving rivers and basements can fill with water. Storm drains often back up with vegetative debris causing additional, localized flooding. Drainage systems within the City of Claremont have been updated and it is

anticipated that they would be fully functional in an emergency. (Source: Claremont General Plan)

Participation in the National Flood Insurance Program

Claremont participates in the National Flood Insurance Program (NFIP). Created by Congress in 1968, the NFIP makes flood insurance available in communities that enact minimum floodplain management rules consistent with the Code of Federal Regulations §60.3. The NFIP also reduces flood losses through regulations that focus on building codes and sound floodplain management. NFIP regulations require that all new construction in floodplains must be elevated at or above base flood level.

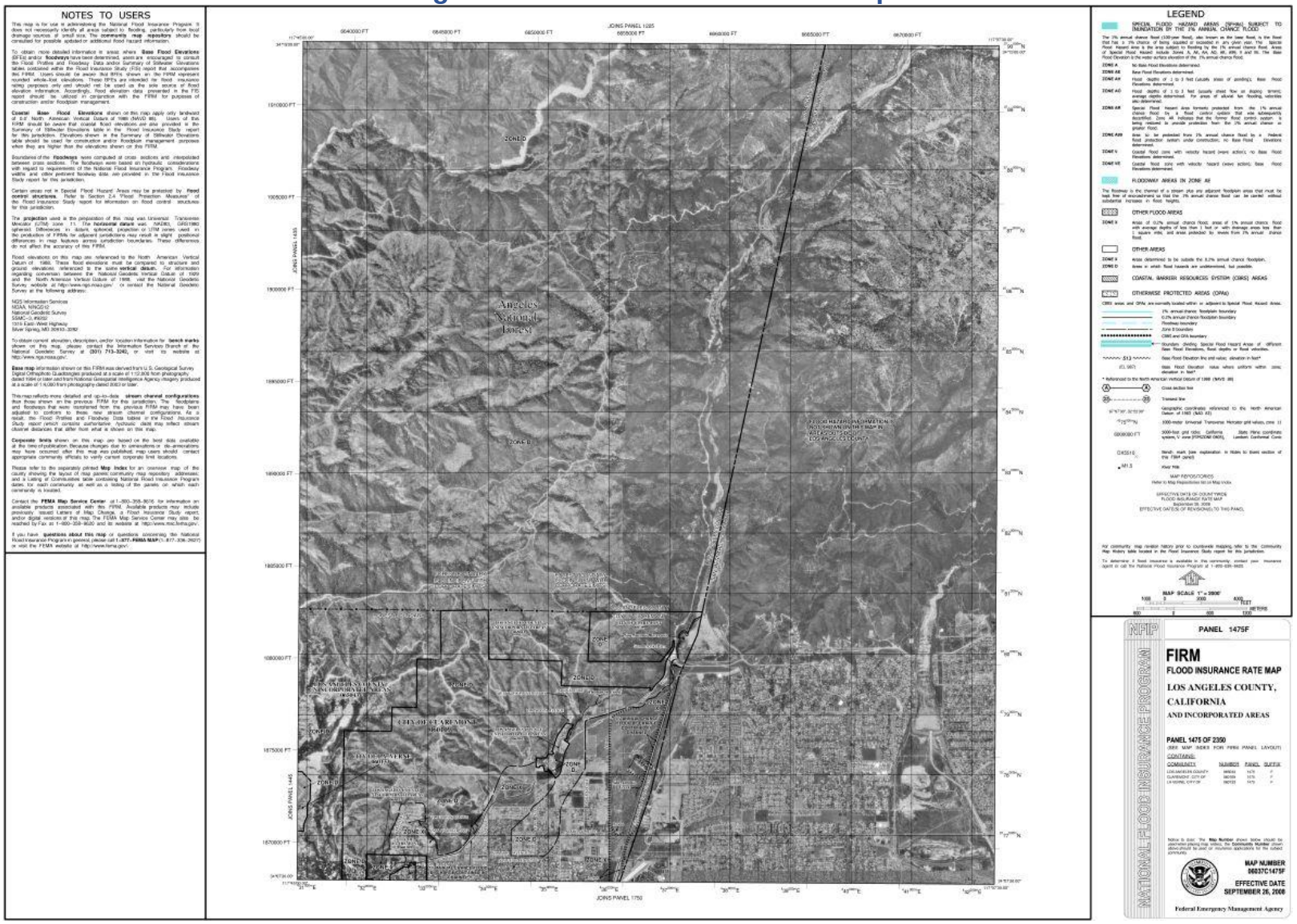
According to FEMA, the built areas of the City are in Flood Zone X, meaning that the area is not located within a 100-yearflood plain. FEMA maps showing areas that require flood insurance are maintained at City Hall.

Mapping Floods in Claremont

A Flood Insurance Rate Map (FIRM) is the official map produced by FEMA which delineates Special Flood Hazard Area (SFHA) in communities where NFIP regulations apply. FIRMs are also used by insurance agents and mortgage lenders to determine if flood insurance is required and what insurance rates should apply. Water surface elevations are combined with topographic data to develop FIRMs. FIRMs illustrate areas that would be inundated during a 100-year flood, floodway areas, and elevations marking the 100-year-flood level.

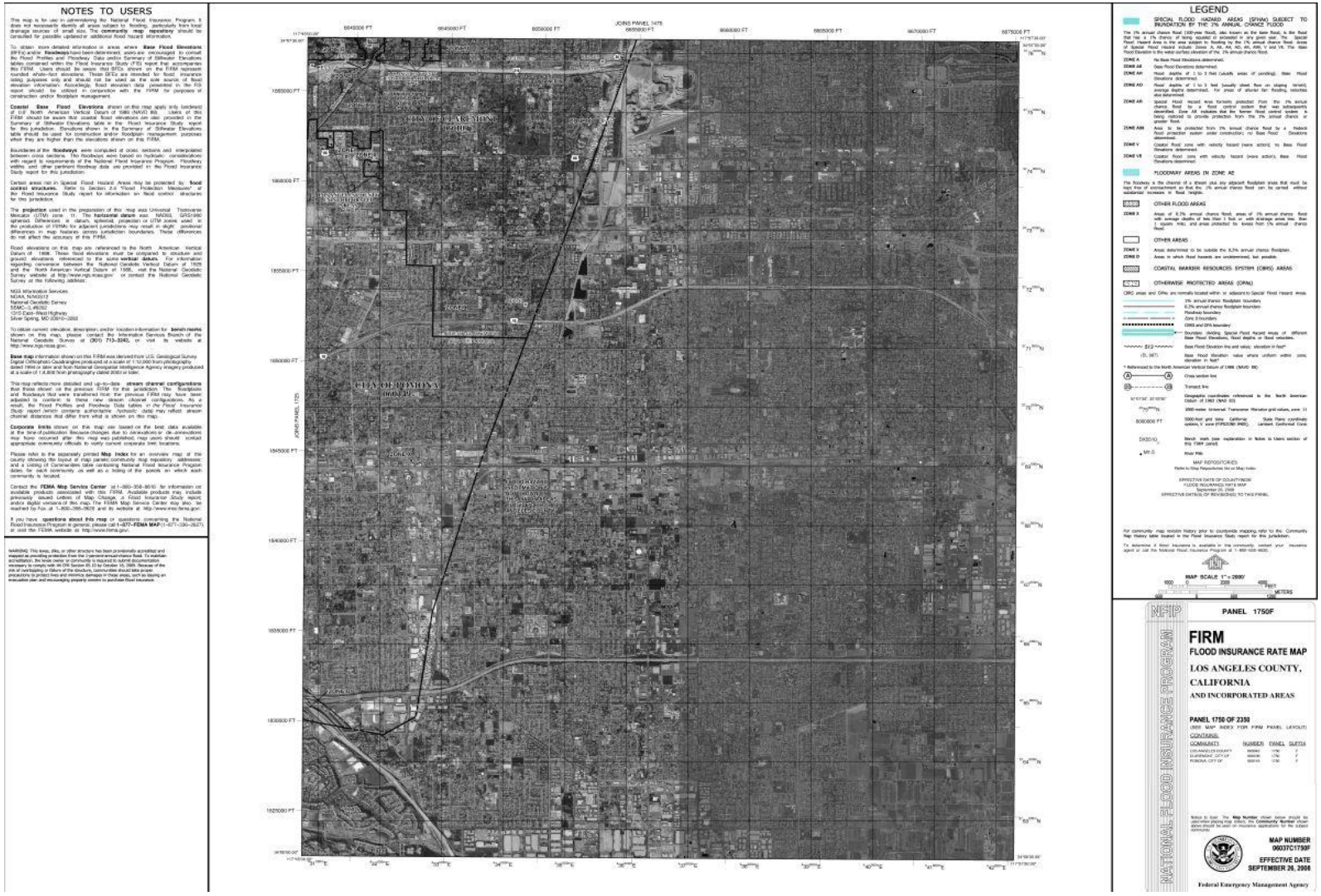
SFHAs are areas at or below a flood elevation that has a one percent or greater probability of being equaled or exceeded during any given year (this is also known as a 100-year flood event). This flood, which is referred to as the base flood, is the national standard on which the floodplain management and insurance requirements of the NFIP are based.

Figure 11: Flood Insurance Rate Map 1



Source: FEMA, NFIP

Figure 12: Flood Insurance Rate Map 2



Source: FEMA, NFIP

Previous Occurrences

Historically, flooding has been an issue in Claremont, as storm runoff from Mount Baldy rushes rapidly down the many canyons that outlet onto the Claremont alluvial plain. In 1938, a tremendous flood hit Claremont, damaging many properties and destroying most City streets. Over $350,000 in damage was done (calculated in 1938 dollars), and there were eight fatalities. There was severe damage was to the roadways as well as to many homes and the Claremont Colleges. Floods also occurred in 1941 and 1943.

However, since completion of the San Antonio Dam in 1956, the structure has served important flood control and water supply functions for Claremont. Localized flooding is still an issue during heavy rainfall, but the dam has halted most of the severe floods. (Source: City of Claremont General Plan). Since construction of the Dam, only two flooding incidents have affected Claremont both occurring in1969. During the month of January 1969, Mount Baldy recorded a record 50.85" of rainfall over ten days. Because of the San Antonio Dam, Claremont received little damage as compared to surrounding communities. This decrease in damage was likely due to the protection provided by preventative efforts, such as flood channels and the dam.

Probability of Future Events

Flooding is a recurring event in Los Angeles County. Claremont will continue to be at risk for flood events.

Climate Change Considerations

Climate change is expected to increase the average intensity of atmospheric river storms that affect Southern California. The increase in intensity could increase the number of flood events, because there may be storms severe enough to overwhelm existing flood control and drainage infrastructure. Climate change may also increase the severity of the most intense flooding, because the severe atmospheric river storms that often cause such events are projected to become 10 to 20 percent more intense. It is unclear whether any changes to the climate may affect the frequency or intensity of flooding in Claremont. It is possible that droughts, which are expected to occur with greater frequency and to be more intense as a result of climate change, may exacerbate flooding. Dry soil cannot absorb water as easily, which can lead to ponding and increased runoff when rains do return.

Impact of Flooding on Claremont

Floods and their impacts vary by location and severity of any given flood event, and likely only affect certain areas of the county during specific times.

Property Loss Resulting from Flooding Events

The type of property damage caused by flood events depends on the depth and velocity of the flood waters. Faster moving flood waters can wash buildings off their foundations and sweep cars downstream. Pipelines, bridges, and other infrastructure can be damaged when high waters combine with flood debris. Extensive damage can be caused by basement flooding and landslide damage related to soil saturation from flood events. Most flood damage is caused by water saturating materials susceptible to loss (i.e., wood, insulation, wallboard, fabric, furnishings, floor coverings, and appliances). In many cases, flood damage to homes renders them unlivable.

Business/Industry

Flood events impact businesses by damaging property and by interrupting business. Flood events can cut off customer access to a business as well as close a business for repairs. A quick response to the needs of businesses affected by flood events can help a community maintain economic vitality in the face of flood damage. Responses to business damages can include funding to assist owners in elevating or relocating flood-prone business structures.

Public Infrastructure

Publicly owned facilities are a key component of daily life for all citizens of the county. Damage to public water and sewer systems, transportation networks, flood control facilities, emergency facilities, and offices can hinder the ability of the government to deliver services. Government can take action to reduce risk to public infrastructure from flood events, as well as craft public policy that reduces risk to private property from flood events.

Roads

During hazard events, or any type of emergency or disaster, dependable road connections are critical for providing emergency services. Road systems in the City of Claremont are maintained by multiple jurisdictions. Federal, state, county, and city governments all have a stake in protecting roads from flood damage. Road networks often traverse floodplain and floodway areas. Transportation agencies responsible for road maintenance are typically aware of roads at risk from flooding.

Bridges

Bridges are key points of concern during flood events because they are important links in road networks and they can be obstructions in watercourses, inhibiting the flow of water during flood events. The bridges in the City of Claremont are state, county, city, or privately owned. A state-designated inspector must inspect all state, county, and city bridges every two years; but private bridges are not inspected and can be very dangerous.

The inspections are rigorous, looking at everything from seismic capability to erosion and scour.

The five highest priority bridges in the City of Claremont are currently mitigated to more fully withstand potential natural disasters. The highest priority bridge is located on Mountain Avenue at the base of Claraboya residential area. This is high priority because if this bridge is destroyed, there is no other exit route for those living north of it in the Claraboya/Johnson's Pasture area. Other priority bridges include the Freeway Bridges (3 on the I-10 and approximately 11 on the I-210).

Storm Water Systems

Local drainage problems are common throughout the City. The City of Claremont Community Services staff is aware of local drainage threats. The problems are often present where storm water runoff enters culverts or goes underground into storm sewers. Inadequate maintenance can also contribute to the flood hazard in urban areas.

Debris in the Storm Drains

Storm water pollution is urban runoff water that picks up pollutants as it flows through the storm drain system – a network of channels, gutters and pipes that collect runoff from city streets, neighborhoods, farms, construction sites and parking lots – and empties directly into local waterways.

Unlike sewage, which goes to treatment plants, urban runoff flows untreated through the storm drain system. Anything thrown, swept or poured into the street, gutter or a catch basin – the curbside openings that lead into the storm drain system – can flow directly into our channels, creeks, bays and ocean. This includes pollutants like trash, pet waste, cigarette butts, motor oil, anti-freeze, runoff from pesticides and fertilizers, paint from brushes and containers rinsed in the gutter, and toxic household chemicals.

Contaminated urban runoff is an uncontrolled nonpoint source of pollution into local waters, and contributes to beach closures. Litter, leaves and other debris can clog catch basins causing flooding when it rains. Storm water pollution may contribute to beach closures, which hurt local businesses, tourism and Los Angeles County's image as a desirable place to live and work. It is illegal for businesses without a permit to discharge wastewater or other materials into the storm drain system.

Water/Wastewater Treatment Facilities

The City of Claremont lies within Sanitary District #21 in the City of Claremont, and operates sewage treatment facilities. There is one major water service company in the City of Claremont, although there are multiple water sources. These sources include the Three Valley Municipal Water District and various groundwater sources from the Inland Valley.

Water Quality

Environmental quality problems include bacteria, toxins, and pollution. The City of Claremont has high levels of nitrates within the water system. General pollution problems are not as evident within the City.

Nonquantifiable Impacts

Impact that is not quantified, but anticipated in future events includes:

- ✓ Injury and loss of life
- ✓ Commercial and residential structural damage
- ✓ Disruption of and damage to public infrastructure
- ✓ Secondary health hazards (e.g., mold and mildew)
- ✓ Damage to roads/bridges resulting in loss of mobility
- ✓ Significant economic impact (jobs, sales, tax revenue) upon the community
- ✓ Negative impact on commercial and residential property values
- ✓ Significant disruption to students and teachers as temporary facilities and relocations would likely be needed

Summary of Claremont's Vulnerability to Flood

Claremont has a long history of moderate to severe flooding during major storms. The establishment of the San Antonio Dam has mitigated much of the problem. However, flooding remains a potential problem, particularly as climate change can bring more frequent and severe storms.

Hazard: Landslide

Hazard Description

A landslide is defined as the movement of a mass of rock, debris, or earth down a slope. The term “landslide” encompasses events such as rock falls, topples, slides, spreads, and flows. Landslides can be initiated by rainfall, earthquakes, volcanic activity, changes in groundwater, and/or a change of a slope caused by construction activities.

Landslides can be broken into two categories: rapidly moving (generally known as debris flows) and slow moving. Rapidly moving landslides or debris flows present the greatest risk to human life, and people living in or traveling through areas prone to rapidly moving landslides are at increased risk of serious injury. Slow moving landslides can cause significant property damage but are less likely to result in serious human injuries.

Landslides vary greatly in their volume of rock and soil, the length, width, and depth of the area affected, frequency of occurrence, and speed of movement. Some characteristics that determine the type of landslide are slope of the hillside, moisture content, and the nature of the underlying materials. Landslides are given different names, depending on the type of failure, and their composition and characteristics.

A debris or mud flow is a river of rock, earth and other materials, including vegetation that is saturated with water. This high percentage of water gives the debris flow a very rapid rate of movement down a slope. Debris flows often with speeds greater than 20 mile per hour, and often move much faster. This high rate of speed makes debris flows extremely dangerous to people and property in its path.

Wildland fires in hills covered with chaparral are often a precursor to debris flows in burned out canyons. The extreme heat of a wildfire creates a soil condition in which the earth becomes impervious to water by creating a waxy-like layer just below the ground surface. Since the water cannot be absorbed into the soil, it rapidly accumulates on slopes, often gathering loose particles of soil into a sheet of mud and debris. Debris flows often originate miles away from unsuspecting persons and approaches at a high rate of speed with little warning.

Natural processes can cause landslides or re-activate historical landslide sites. The removal or undercutting of shoreline-supporting material along bodies of water by currents and waves produces countless small slides each year. Seismic tremors can trigger landslides on slopes historically known to have landslide movement. Earthquakes also cause additional failure (lateral spreading) that occurs on gentle slopes above steep streams and riverbanks.

Location and Extent

Landslides are a common hazard in California. Weathering and the decomposition of geologic materials produces conditions conducive to landslides, and human activity further exacerbates many landslide problems.

Debris flows travel down a hillside with speeds up to 200 miles per hour (more commonly, 30 – 50 miles per hour), depending on the slope angle, water content, and type of earth and debris in the flow. These flows are initiated by heavy, usually sustained, periods of rainfall, but sometimes happen as a result of short bursts of concentrated rainfall in susceptible areas. Burned areas charred by wildfires are particularly susceptible to debris flows, given certain soil characteristics and slope conditions.

Although landslides are a natural geologic process, the incidence of landslides and the impact on people are exacerbated by human activities. Grading for road construction and development increases slope steepness and decreases the stability of a hill slope by adding weight to the top of the slope, removing support at the base of the slope, and increasing water content. Other human activity affecting landslides include: excavation, drainage and groundwater alterations, and changes in vegetation.

Excavation and Grading

Slope excavation is common in the development of home sites or roads on sloping terrain. Grading these slopes results in slopes that are steeper than the pre-existing natural slopes. Since slope steepness is a major factor in landslides, these steeper slopes are at an increased risk for landslides.

The added weight of fill placed on slopes also results in an increased landslide hazard. Small landslides are fairly common along roads, in either the road cut or the road fill. Landslides occurring below new construction sites are indicators of the potential impacts stemming from excavation.

Drainage and Groundwater Alterations

Water flowing through or above ground is often the trigger for landslides. Any activity that increases the amount of water flowing into landslide-prone slopes increases landslide hazards. Broken or leaking water and sewer lines can be especially problematic. However, even lawn irrigation in landslide prone locations can result in damaging landslides. Ineffective storm water management and excess runoff also cause erosion and increase the risk of landslide hazards. Drainage is affected naturally by the geology and topography of an area. Development that results in an increase in impervious surface impairs the ability of the land to absorb water and redirects water to other areas. Channels, streams, ponding, and erosion on slopes indicate potential slope problems.

Road and driveway drains, gutters, downspouts, and other constructed drainage facilities concentrates and accelerates flow. Ground saturation and concentrated velocity flow are major causes of slope problems and triggers landslides.

Changes in Vegetation

Removing vegetation from very steep slopes increases landslide hazards. Areas that experience wildfire and land clearing for development may have long periods of increased landslide hazard. Changing from native ground cover plants to ground cover that require constant watering to remain green can increase the risk of landslide.

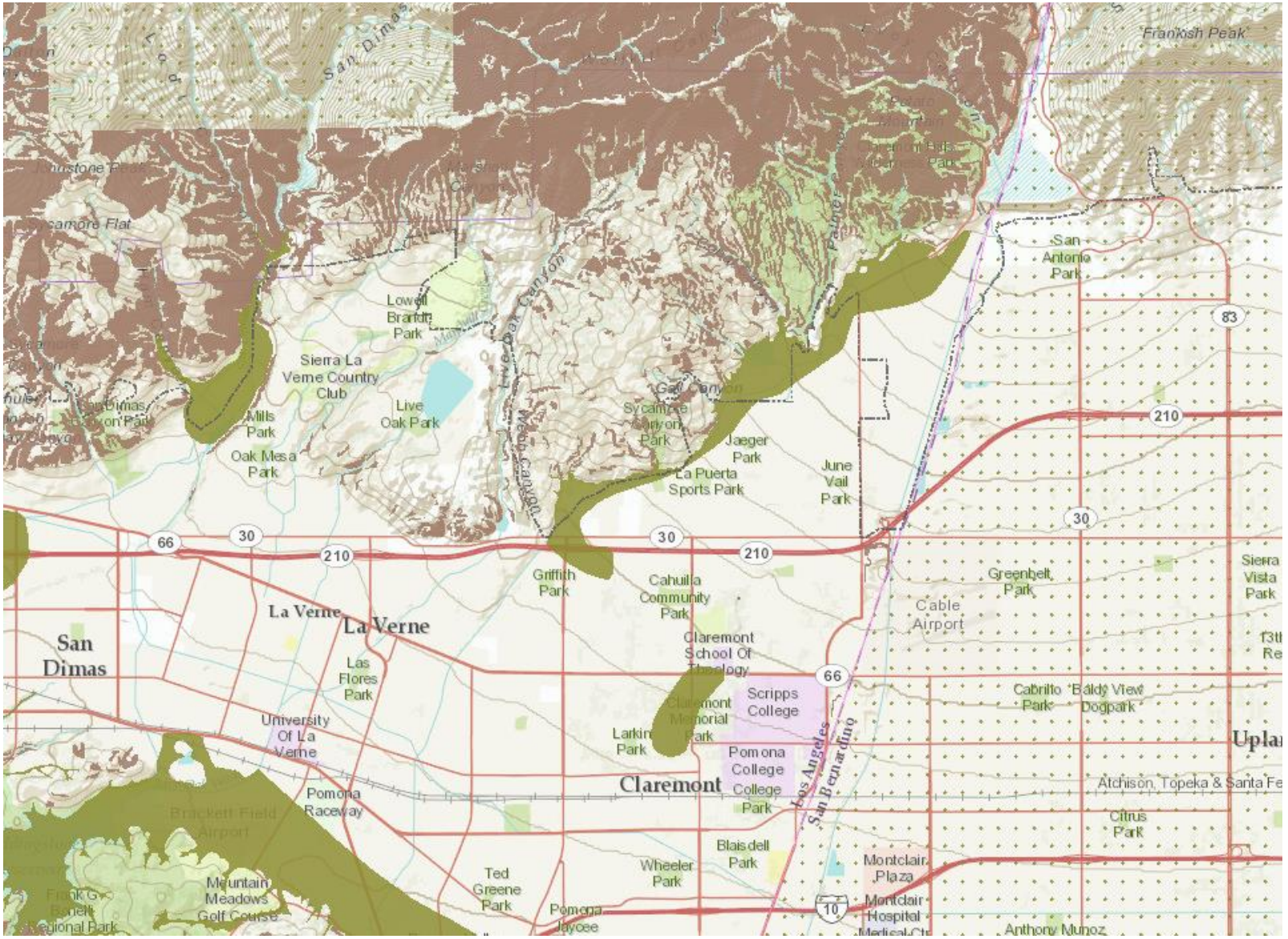
Areas Particularly Susceptible to Landslides

Locations at risk from landslides or debris flows include areas with one or more of the following conditions:

- On or close to steep hills
- Steep road-cuts or excavations
- Existing landslides or places of known historic landslides (such sites often have tilted power lines, trees tilted in various directions, cracks in the ground, and irregular-surfaced ground)
- Steep areas where surface runoff is channeled, such as below culverts, V-shaped valleys, canyon bottoms, and steep stream channels
- Fan-shaped areas of sediment and boulder accumulation at the outlets of canyons
- Canyon areas below hillside and mountains that recently (within 1-6 years) were subjected to a wildland fire

Figure 13: Claremont Landslide Hazard Map shows deep seated landslide susceptibility areas in Claremont.

Figure 13: Claremont Landslide Hazard Map



Source: CalOES

Previous Occurrences

In 1969, the Glendora landslip significantly impacted Claremont causing $26.9 million in damages. Over 175 houses were damaged, mainly by debris flows. More recently, in January and February of 2019, heavy rains caused a landslide in the Angeles National Forest north of Claremont and generated over 3,500 tons of debris that had to be removed by Los Angeles County Public Works.

Other significant landslides in the region over the past 30 years include:

- **1994 Northridge Earthquake Landslides** As a result of the Magnitude 6.7 Northridge Earthquake, more than 11,000 landslides occurred over an area of 10,000 km^2. Most were in the Santa Susana Mountains and in mountains north of the Santa Clara River Valley. The landslides destroyed dozens of homes, blocked roads, and damaged oil-field infrastructure.
- **March 1995, Los Angeles and Ventura Counties** Above normal rainfall triggered damaging debris flows, deep-seated landslides, and flooding. Several deep-seated landslides were triggered by the storms, the most notable was the La Conchita landslide, which in combination with a local debris flow, destroyed or badly damaged 11 to 12 homes in the small town of La Conchita, about 20 km west of Ventura. There also was widespread debris-flow and flood damage to homes, commercial buildings, and roads and highways in areas along the Malibu coast that had been devastated by wildfire two years before.
- **January 2005, Ventura County** A landslide struck the community of La Conchita, killing ten people and destroying or seriously damaging 36 houses.
- **January 2018, Santa Barbara County** In December 2017 the Thomas Fire ravaged areas in Santa Barbara county, burning large amounts of vegetation whose roots had helped stabilize topsoil in hillsides and other vulnerable areas. On January 8, 2018 a storm brought heavy rains; the mudflows began the next day. There were 23 deaths and 163 people hospitalized. Over 100 homes were destroyed and another 300 damaged.
- **December 2018, Malibu** Heavy rain on the Woolsey Fire burned hillsides created debris flows and mudslides in and around Malibu causing several road closures.

Probability of Future Events

Claremont will continue to be at risk for landslides due to the hilly terrain, risk of wildfire and potential for earthquake-induced landslides. Moisture-induced landslides may occur as a consequence of intense storms or winters with heavy rainfall.

Climate Change Considerations

There is no known link between climate change and seismic activity, therefore climate change is not expected to have any effect on earthquake-induced landslides. However, climate change may increase the frequency and/or intensity of moisture-induced landslides. Atmospheric river storms may become more intense as a result of climate change. This causes more precipitation to be absorbed by the soil which may help destabilize hillsides and cause an increase in the frequency of landslide events.

Impact of Landslide on Claremont

Landslides are a serious geologic hazard in almost every state in America. Nationally, landslides cause 25 to 50 deaths each year. The best estimate of direct and indirect costs of landslide damage in the United States range between $1 and $2 billion annually.

Landslides affect utility services, transportation systems, and critical lifelines. The City may suffer immediate damages and loss of service. Disruptions of infrastructure, roads, and critical facilities could also have long-term effects. Utilities -- including potable water, wastewater, telecommunications, natural gas, and electric power -- are all essential to service City needs. Loss of electricity has the most widespread impact on other utilities and on the whole city. Natural gas pipes are also at risk of breakage from landslide movements as small as an inch or two.

Roads and Bridges

Losses incurred from landslide hazards in the City of Claremont are often associated with roads. The City of Claremont and County of Los Angeles are responsible for maintenance of public roads. They are tasked with responding to slides that inhibit the flow of traffic or are damaging a road or a bridge. The road departments do their best to communicate with residents and businesses impacted by landslides.

It is not cost-effective to mitigate all slides because of limited funds, and because some historical slides are likely to become active again even with mitigation measures. The City and County alleviate problem areas by grading slides, and by installing new drainage systems on the slopes to divert water from the landslides. This type of response activity is often the most cost-effective but is only temporary. Unfortunately, many property owners are unaware of slides and the dangers associated with them.

Lifelines and Critical Facilities

Lifelines and critical facilities should remain accessible, if possible, during a natural hazard event. The impact of closed transportation arteries are increased if the closed road or bridge is critical for hospitals and other emergency facilities. Losses of power and phone service are also potential consequences of landslide events. Due to heavy rains, soil erosion in hillside areas can be accelerated, resulting in loss of soil support beneath high voltage transmission towers in hillsides and remote areas. Flood events can also

cause landslides, which have serious impact on gas lines that are located in vulnerable soils.

Nonquantifiable Impacts

While a quantitative vulnerability assessment (an assessment that describes number of lives or amount of property exposed to the hazard) has not yet been conducted for landslide events impacting the City, there are many qualitative factors that point to potential vulnerability. Impacts that are not quantified, but can be anticipated in future events, include:

- ✓ Injury and loss of life
- ✓ Commercial and residential structural damage
- ✓ Disruption of and damage to public infrastructure
- ✓ Damage to roads/bridges resulting in loss of mobility
- ✓ Significant economic impact (jobs, sales, tax revenue) upon the community
- ✓ Negative impact on commercial and residential property values
- ✓ Significant disruption to students and teachers as temporary facilities and relocations would likely be needed

Summary of Claremont's Vulnerability to Earthquakes

Landslides and their impacts will vary by location and severity of any given landslide event and will likely only affect certain areas of the county during specific times. Landslides can impact major transportation arteries, blocking residents from essential services.

Factors included in assessing landslide risk include population and property distribution in the hazard area, the frequency of landslide or debris flow occurrences, slope steepness, soil characteristics, and precipitation intensity. Many landslides are difficult to mitigate, particularly in areas of large historic movement with weak underlying geologic materials. As communities continue to modify the terrain and influence natural processes, it is important to be aware of the physical properties of the underlying soils as they, along with climate, create landslide hazards. Even with proper planning, landslides continue to threaten the safety of people, property, and infrastructure, but without proper planning, landslide hazards are even more common and more destructive.

Although landslides are a natural occurrence, human impact can substantially affect the potential for landslide failures in the City of Claremont. Proper planning and geotechnical engineering will reduce the threat of safety of people, property, and infrastructure.

Hazard: Wildfire

Hazard Description

A wildfire is a fire that burns in largely undeveloped and natural areas. Wildfires spread by consuming flammable vegetation. This fire type often begins unnoticed, spreads quickly, and is usually signaled by dense smoke that may be visible from miles around. Wildfires can be caused by human activities (e.g., unattended burns, campfires, or off-road vehicles without spark arresting muffles) or by natural events such as lightning. Naturally occurring and non-native species of grasses, brush, and trees fuel wildfires. Because of their distance from firefighting resources, they can be difficult to contain and can cause a great deal of destruction.

The potential for significant damage to life and property exists in areas designated as “wildland-urban interface areas,” where development is adjacent to densely vegetated areas. Certain conditions must be present for significant interface fires to occur. The most common conditions include: hot, dry and windy weather; the inability of fire protection forces to contain or suppress the fire; the occurrence of multiple fires that overwhelm committed resources; and a large fuel load (dense vegetation). Once a fire has started, several conditions influence its behavior, including fuel, topography, weather, drought, and development.

Fuel

Fuel is the material that feeds a fire and is a key factor in wildfire behavior. Fuel is classified by volume and by type. Volume is described in terms of "fuel loading," or the amount of available vegetative fuel. Chaparral, a general term used to describe brushland, is a primary fuel of Southern California wildfires. Although chaparral is often considered as a single species, there are two distinct types: hard chaparral and soft chaparral. Within these two types are dozens of different plants, each with its own particular characteristics. The City of Claremont is composed of chaparral land, especially in the foothills.

An important element in understanding the danger of wildfire is the availability of diverse fuels in the landscape, such as natural vegetation, manmade structures and combustible materials. A house surrounded by brushy growth rather than cleared space allows for greater continuity of fuel and increases the fire’s ability to spread. After decades of fire suppression “dog-hair” thickets have accumulated, which enable high intensity fires to flare and spread rapidly.

Topography

Topography influences the movement of air, thereby directing a fire course. Gulches and canyons can funnel air and act as chimneys, which intensify fire behavior and cause the fire to spread faster. Solar heating of dry, south-facing slopes produces up slope drafts that can complicate fire behavior.

Weather

Weather patterns combined with certain geographic locations can create a favorable climate for wildfire activity. Areas where annual precipitation is less than 30 inches per year are extremely fire susceptible. High-risk areas in Southern California share a hot, dry season in late summer and early fall when high temperatures and low humidity favor fire activity. Santa Ana winds, which are heated by compression as they flow down to Southern California from Utah, create a particularly high risk, as they can rapidly spread what might otherwise be a small fire.

Drought

Recent concerns about the effects of climate change, particularly drought, are contributing to concerns about wildfire vulnerability. Unusually dry winters, or significantly less rainfall than normal, can lead to relatively drier conditions and leave reservoirs and water tables lower. Drought leads to problems with irrigation and contributes to additional fires, or increased difficulty in fighting fires.

Development

Growth and development in scrubland and forested areas is increasing the number of structures in Southern California interface areas. Wildfire affects development, yet development can also influence wildfire. Owners often prefer homes that are private with scenic views, nestled in vegetation, and use natural materials. A private setting is usually far from public roads, or hidden behind a narrow, curving driveway. These conditions, however, make evacuation and firefighting difficult.

Location and Extent

California experiences large, destructive wildland fires almost every year, and Los Angeles County is no exception. However, in recent years, the City of Claremont has lost neither structures nor life to wildfires.

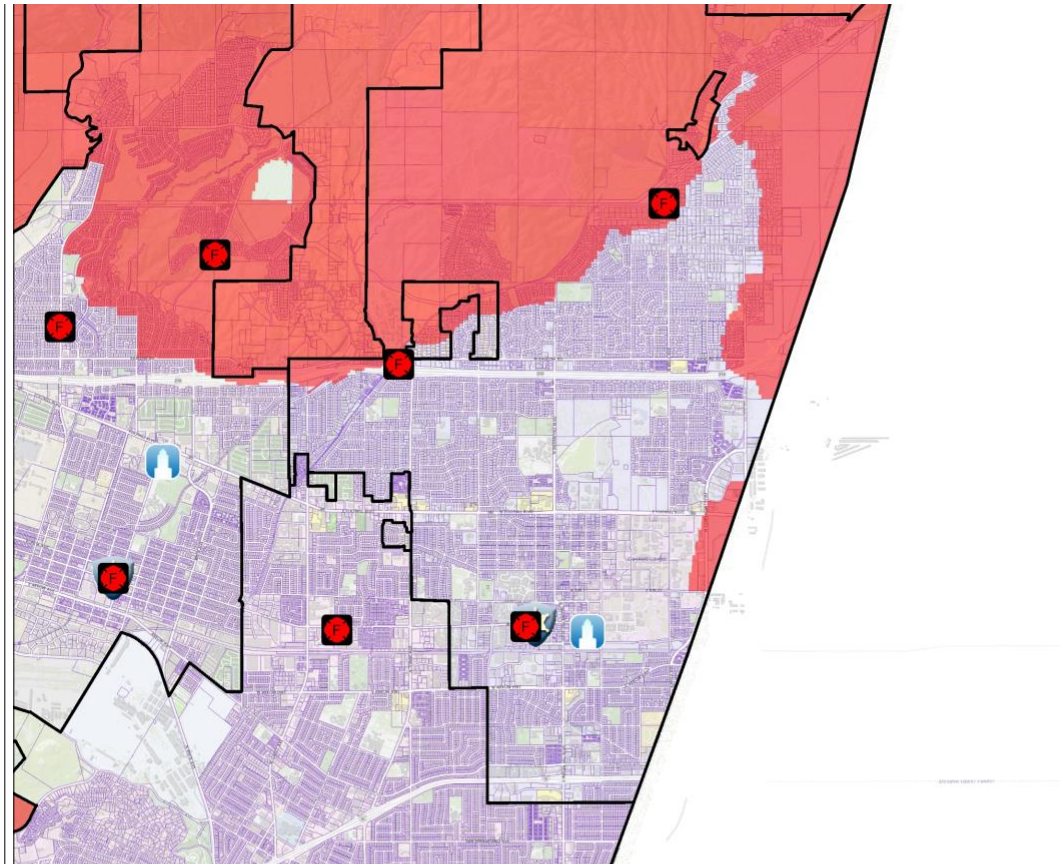
Southern California has two distinct areas of risk for wildland fire. The foothills and lower mountain areas are most often covered with scrub brush or chaparral. The higher elevations of mountains also have heavily forested terrain. The lower elevations covered with chaparral create one type of exposure.

One challenge Southern California faces regarding the wildfire hazard is from the increasing number of houses being built on the urban/wildland interface. Every year the growing population expands further into the hills and mountains, including forest lands. The increased "interface" between urban/suburban areas, and the open spaces created by this expansion, produces a significant increase in threats to life and property from fires, and pushes existing fire protection systems beyond original or current design and capability. Property owners in the interface are not aware of the problems and fire hazards or risks on their own property. Furthermore, human activities increase the incidence of fire ignition and potential damage.

Wildfires are not measured on a specific scale and are usually classified by size (e.g., acres burned) or impact (buildings destroyed or damaged, injuries or deaths, cost of damage, etc.). The risk of wildfire is classified on a three-tier scale of fire hazard severity zones (FHSZs): very high, high, and moderate. These classes do not correspond to a specific risk or intensity of fire but are qualitative terms that consider many factors. Fire-prone areas are also classified by the agency responsible for fire protection. Federal Responsibility Areas (FRAs) fall to federal agencies such as the US Forest Service, the Bureau of Land Management, and the National Park Service. State Responsibilities Areas (SRAs) fall to the California Department of Forestry and Fire Protection (CAL FIRE), and Local Responsibility Areas (LRAs) fall to local governments.

The combination of population density, terrain, weather, and residential and commercial development in the foothill area of Claremont presents a year-round threat of wildfires encroaching upon developed areas. Portions of the Claremont foothills are classic examples of the "chaparral-urban interface" where steadily increasing development meets or are incorporated into wild land areas, many of these bordering homes are in areas classified as Very High Fire Hazard Severity Zones (VHFHSZs). Additionally, parts of the Claremont Colleges community borders an area classified as VHFHSZ. Figure 14: Fire Hazard Severity Zones depicts the VHFHSZs mapped throughout Claremont.

Figure 14: Fire Hazard Severity Zones



Source: Los Angeles County GIS Viewer

Previous Occurrences

Previous Fires in Claremont

In 2002, the Williams Fire made its way from Azusa to La Verne burning 37,240 acres and destroying 76 structures. While it continued to burn from La Verne and cross into Claremont, it threatened the northern neighborhoods of Claremont such as Claraboya, Thompson Creek, and Padua Hills. Fortunately, the winds dissipated before causing property damage and threatening lives in Claremont.

In 2003, the massive Grand Prix fire, which ultimately combined with the Old Fire to form a 40-mile front across the San Gabriel Mountains, consumed almost 60,000 acres, and destroyed and/or damaged 71 homes in and around Claremont. Thousands of Claremont residents were forced to evacuate and seek temporary shelter elsewhere. The damage caused by the fire in the City of Claremont was estimated at $20 million.

The Station Fire impacted the City in 2009. Although there was no damage or impact to the City, costs included personnel responses in the form of mutual aide.

Historic Fires in Southern California

Large fires have been part of the Southern California landscape for decades.

- **2003 Southern California Fires**
  During the 2003 fire season, more than 6.9 million acres of public and private lands burned in the U.S., resulting in loss of property, damage to resources, and disruption of community services. Taxpayers spent more than $1.6 billion to combat more than 88,400 fires nationwide. Many of these fires burned in wildland/urban interface areas and exceeded the fire suppression capabilities of those areas.

  The fall of 2003 was a very destructive wildfire season in California. In a ten day period, 12 separate fires raged across Southern California in Los Angeles, Riverside, San Bernardino, San Diego and Ventura counties. The Grand Prix Fire started on October 21, 2003 and burned a total of 50,618 acres between Claremont and Lytle Creek. The fire destroyed 136 homes and was ruled “accidental but human-initiated.” The Simi Fire started on October 25, 2003 and burned a total of 107,570 acres between Simi Hills and southeastern Simi Valley, in eastern Ventura County and western Los Angeles County, California. It destroyed 37 homes and 278 buildings. The cause of the fire remains unknown.

- **2007 Southern California Fires**
  In late October 2007, Southern California experienced an unusually severe fire weather event characterized by intense, dry, gusty Santa Ana winds. This weather event drove a series of destructive wildfires that took a devastating toll on people, property, natural resources, and infrastructure. Although some fires burned into early November, the heaviest damage occurred during the first three days of the siege when the winds were the strongest.

During this siege, 17 people lost their lives, ten were killed by the fires outright, three were killed while evacuating, four died from other fire siege related causes, and 140 firefighters, and an unknown number of civilians were injured. A total of 3,069 homes and other buildings were destroyed, and hundreds more were damaged. Hundreds of thousands of people were evacuated at the height of the siege. The fires burned over half a million acres, including populated areas, wildlife habitat and watershed. Portions of the electrical power distribution network, telecommunications systems, and even some community water sources were destroyed. Transportation was disrupted over a large area for several days, including numerous road closures. Both the Governor of California and the President of the United States personally toured the ongoing fires. Governor Schwarzenegger proclaimed a state of emergency in seven counties before the end of the first day. President Bush quickly declared a major disaster. While the total impact of the 2007 fire siege was less than the disastrous fires of 2003, it was unquestionably one of the most devastating wildfire events in the history of California.

Recent Wildfires in California

The last five years have seen destructive and deadly fires across California. According to California Fire, seven[6] of the ten largest California wildfires have occurred over the past five years. The largest was the August Complex Fire (2020) that burned over one million acres across seven Northern California counties, destroyed 935 structures and resulted in one death. The Camp Fire (2018) in Butte destroyed over 18,000 structures and resulted in 85 deaths. The Woolsey Fire (2018) destroyed over 1,600 structures and resulted in three deaths in Ventura County.

Table 12: Recent Wildfires in California Costs

Year	2016	2017	2018	2019	2020
Number of Fires	6,959	9,270	7,948	7,148	7,335
Acres Burned	669,534	1,548,429	1,975,086	259,823	1,666,286
Fire Suppression Costs ($ million)	$534	$773	$890	$691 (EST)	$372 (EST)

Probability of Future Wildfire Events

The climate in Los Angeles County is characterized by warm, dry-summers and cool, sometimes wet winters. High moisture levels during the winter rainy season significantly increase the growth of plants. However, the vegetation is dried during the long, hot summers, decreasing plant moisture content and increasing the ratio of dead fuel to living

[6] https://www.fire.ca.gov/media/4jandlhh/top20_acres.pdf

fuel. As a result, fire susceptibility increases dramatically, particularly in late summer and early autumn.

Additionally, the Santa Ana winds contribute to the high incidence of wildfires in Los Angeles County. These winds originate during the autumn months in the hot, dry interior deserts to the north and east of Los Angeles County. They often sweep west into the county, bringing extremely dry air and high wind speeds that further desiccate plant communities during the period of the year when the constituent species have very low moisture content. The effect of these winds on existing fires is particularly dangerous; the winds can greatly increase the rate at which fires spread. Based on the conditions described above and the history of occurrence in the past, future events are very likely to occur. extent of future events will depend on specific conditions at the time of the fire.

Climate Change Considerations

Climate change is expected to cause an increase in temperatures, as well as more frequent and intense drought conditions. This will likely increase the amount of dry plant chaparral available for fuel, increasing the risk of wildfire statewide. Increases in fuel supplies could cause wildfires to move faster or spread into more-developed areas, which could increase the threat to Claremont.

Impact of Wildfire on Claremont

The primary effects of fire, such as loss of life, injury, destruction of buildings and wildlife, are well known. Fire also has a number of secondary effects, such as strained public utilities, depleted water supplies, downed power lines, disrupted telephone systems, and closed roads. In addition, flood control facilities are overtaxed by the increased flow from bare hillsides, and the resulting debris that washes down. Affected recreation areas may have to close or restrict operations. Moreover, buildings destroyed by fire are usually eligible for property tax reassessment, which reduces revenue to local government.

Fire destroys surface vegetation, leaving the soil bare and subject to erosion, when the rains begin in the fall and winter. Raindrops hit the surface with undiminished impact, splashing particles of soil loose that move downhill and are carried away by running water. Fire also destroys most of the roots that hold the soil in place, allowing running water to wash the soil away. Mudslides and mudflows can result from these processes.

In the event of a wildfire, vegetation, structures and other flammables can merge into unwieldy and unpredictable events. Factors important to the fighting of such fires include access, firebreaks, proximity of water sources, and proximity to a fire station, available firefighting personnel and equipment. Reviewing past wildland/urban interface fires shows that many structures are destroyed or damaged for one or more of the following reasons:

- Combustible roofing material
- Wood construction
- Structures with no defensible space

- Fire department has poor access to structures
- Subdivisions located in heavy natural fuel types
- Structures located on steep slopes covered with flammable vegetation
- Limited water supply
- Winds over 30 miles per hour

Road Access

Road access is a major issue for all emergency service providers. As development encroaches into the rural areas of the county, the number of houses without adequate turn-around space is increasing. In many areas, there is not adequate space for emergency vehicle turnarounds in single-family residential neighborhoods, obstructing emergency workers because they cannot access houses.

Large facilities (particularly schools and other facilities with vulnerable populations) located near the Wildland/Urban Interface must incorporate adequate evacuation planning into their Site Emergency Plans. Fire drills and fire evacuation routes should be pre-planned and practiced with transportation vehicles and shelter locations pre-planned.

Water Supply

Fire fighters in remote and rural areas are faced with limited water supply and lack of hydrant taps. Rural areas are characteristically outfitted with small diameter pipe water systems, inadequate for providing sustained fire fighting flows.

Interface Fire Education Programs and Enforcement

Fire protection in urban/wildland interface areas may rely heavily on the landowner's personal initiative to take measures to protect his or her own property. Therefore, public education and awareness plays a greater role in interface areas. In those areas with strict fire codes, property owners who resist maintaining the minimum brush clearances can be cited for failure to clear brush.

Need for Mitigation Programs

Continued development into the interface areas has growing impact on the wildland/urban interface. Wildfires will continue to present a substantial hazard to life and property in Southern California because many of its communities are built within or adjacent to hillsides and mountainous areas. The continued growth and development increases the public need for mitigation planning in Southern California.

Nonquantifiable Impacts

Impact that is not quantified, but can be anticipated in future events, includes:

- ✓ Injury and loss of life
- ✓ Commercial and residential structural damage
- ✓ Disruption of and damage to public infrastructure
- ✓ Damage to roads/bridges resulting in loss of mobility
- ✓ Significant economic impact (jobs, sales, tax revenue) upon the community

- ✓ Negative impact on commercial and residential property values
- ✓ Significant disruption to students and teachers as temporary facilities and relocations would likely be needed

Homeowner Risk Mitigation: Wildfire Hazard

The City has identified properties within Very High Fire Hazard Severity Zones as shown in Map: City of Claremont Fire Hazard Severity Zones. Defensible space can be created around structures by taking precautionary measures such as thinning trees and brush within a minimum of 30 feet of a home. Beyond 30 feet, remove dead wood, debris and low tree branches. Keep lawns trimmed, leaves raked, and the roof and rain-gutters free from debris such as dead limbs and leaves. Stack firewood at least 30 feet away from a home. Store flammable materials, liquids and solvents in metal containers outside the home at least 30 feet away from structures and wooden fences.

In Claremont, this scenario highlights the need for fire mitigation activity in all sectors of the region, wildland/urban interface or not. Examples of actions homeowners can take to mitigate fires include:

- Define a defensible space of a 30-foot non-combustible buffer area around the house
- Reduce flammable vegetation, trees and brush around the house
- Remove or prune trees
- Cut grass and weeds regularly
- Relocate wood piles and leftover materials
- Keep it clean
- Install fire resistant roofing materials and spark arrestors on chimneys

Summary of Claremont's Vulnerability to Wildfire

Wildfires are a natural part of the ecosystem in Southern California and present a substantial hazard to life and property in communities built within or adjacent to hillsides and mountainous areas. Fire potential is typically greatest in the months of August, September, and October, when dry vegetation, combined with offshore dry Santa Ana winds, create a high potential for spontaneous fires. The hillsides and steep slopes facilitate rapid fire spread. There is a huge potential for losses due to wildland/urban interface fires in Claremont.

In urban areas, the effectiveness of fire protection efforts is based upon several factors, including the age of structures, efficiency of circulation routes that ultimately affect response times and availability of water resources to combat fires. In wildland areas, taking the proper precautions, such as the use of fire resistant building materials, a pro-active Fire Prevention inspection program, and the development of defensible space around structures where combustible vegetation is controlled, can protect developed lands from fires and, therefore, reduce the potential loss of life and property.

Hazard: Windstorm

Hazard Description

A windstorm event in the region can range from short term microburst activity lasting only minutes to a long duration Santa Ana wind condition that lasts for several days. Tornados, like those that occur every year in the Midwest and Southeast parts of the United States, are a rare phenomenon in most of California, with most tornado-like activity coming from microbursts. Windstorms in the region can cause extensive damage to road and highway infrastructure and critical utility facilities.

Santa Ana Winds

Santa Ana winds are generally defined as warm, dry winds that blow from the east or northeast (offshore). Santa Ana Winds travel from the stable, high-pressure weather system called the Great Basin through the canyons and towards the low-pressure system off the Pacific. The City of Claremont is in the direct path of the ocean-bound Santa Ana winds.

Microbursts and Thunderstorm Wind Events

Microbursts are strong, damaging winds which strike the ground and often give the impression a tornado has struck. They frequently occur during intense thunderstorms. The origin of a microburst is downward moving air from a thunderstorm's core. But unlike a tornado, they affect only a rather small area.

Tornados

A tornado is a violently rotating column of air extending between, and in contact with, a cloud and the surface of the earth. Tornados are often (but not always) visible as a funnel cloud. On a local-scale, tornados are the most intense of all atmospheric circulations and wind can reach destructive speeds of more than 300 mph. A tornado’s vortex is typically a few hundred meters in diameter, and damage paths can be up to 1 mile wide and 50 miles long

Location and Extent

The entire City is equally at risk for windstorm events.

Santa Ana Winds

Santa Ana winds commonly occur between October and February, with December having the highest frequency of events. Summer events are rare. Wind speeds are typically north to east at 35 knots through and below passes, and canyons with gusts to 50 knots. Stronger Santa Ana winds has gusts greater than 60 knots over widespread areas, and gusts greater than 100 knots in favored areas. Frequently, the strongest winds in the basin occur during the night and morning hours due to the absence of a sea breeze. The sea breeze which typically blows onshore daily, can moderate the Santa Ana winds during the late morning and afternoon hours. Santa Ana winds are an important forecast challenge because of the high fire danger associated with them.

These winds occur below the passes and canyons of the coastal ranges of Southern California and in the Los Angeles and Orange County basins. Santa Ana winds often blow with exceptional speed in the Santa Ana Canyon (the canyon from which it derives its name). Forecasters at the National Weather Service offices 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. These winds accelerate to speeds of 35 knots as they move through canyons and passes, with gusts to 50 or even 60 knots.

Microbursts

A microburst is a type of surface wind in excess of 39 mph caused by a small-scale, strong downdraft from the base of convective thundershowers and thunderstorms. Microbursts are confined to less than 2.5 miles in diameter from the initial point of downdraft impact. An intense microburst can result in damaging winds near 170 mph and often last for less than five minutes.

Tornados

In order to measure the intensity and wind strength of a tornado, Dr. T. Theodore Fujita developed the Fujita Tornado Damage Scale (F-scale). This scale compares the estimated wind velocity with the corresponding amount of suspected damage. The scale measures six classifications of tornados with increasing magnitude from an “F0” tornado to a “F6+” tornado. An updated F-scale was implemented by the NOAA in 2007 and is called the Enhanced F-scale (EF-scale). In Los Angeles County, tornados are extremely rare with 44 Tornado events since 1950, five of which were F2 events and 9 of which were F1.

Table 13: Fujita and Enhanced F-Scale

F SCALE			Operational EF-SCALE	
F Number	Fastest 1/4-mile (mph)	3 Second Gust (mph)	EF Number	3 Second Gust (mph)
0	40-72	45-78	0	65-85
1	73-112	79-117	1	86-110
2	113-157	118-161	2	111-135
3	158-207	162-209	3	136-165
4	208-260	210-261	4	166-200
5	261-318	262-317	5	Over 200

Source: NOAA https://www.spc.noaa.gov/efscale/ef-scale.html

Previous Occurrences

Los Angeles County has experienced both high wind and thunderstorm wind events. The strongest winds are Santa Ana winds in winter. As an example of the impacts from high winds, a windstorm on November 30, 2011, left 300,000 residents without power, some for over one week. The NOAA National Centers for Environmental Information (NCEI) storm events database lists the following wind events from 1990 to 2020:

- 208 high wind events, with one death reported.
- 30 thunderstorm wind events, with one death and two injuries reported.
- 18 tornados from 1990 through 2020, with one reported injury. The recorded tornado events are rated as F0 (13 events), EF0 (two events), F1 (three events).

Following is an overview of major wind events to hit the City and surrounding areas over the past 30 years:

Date	Location and Damage
March 3, 1992	A small tornado with winds to 100 mph, struck a one block strip of the El Sereno district of Los Angeles. Shredding roofs, shattering windows, downing an oak tree and toppling a billboard onto a car. About 10 houses were damaged.
June 16, 1995	A severe thunderstorm spawned a tornado that briefly touched down on the 14800 block of Dalman Street in Whittier. Witnesses said it tore through a chain link gate, swirled rubbish cans in the air, and snapped off ten-foot long tree branches. A rain gutter was also torn from a house.
February 16, 2000	A cold and unstable airmass generated heavy showers and thunderstorms across Central and Southern California. Numerous reports of heavy showers and small hail were received from the area. In Covina, a weak tornado developed, damaging four mobile homes. Fortunately, no one was injured. With the heavy showers, street flooding was reported in Monrovia.
December 12, 2001	In the community of Walnut, a weak tornado touched down in the early morning hours. Several homes sustained minor roof damage and about 30 trees were knocked down. No injuries were reported.
November 27, 2004	In the Antelope Valley, strong winds gusting to 50 mph knocked down a tree onto a vehicle traveling along Avenue K in the city of Lancaster. A six foot branch smashed through the windshield, instantly killing the female driver. A 16 year-old passenger sustained moderate injuries.
October 26, 2020	Claremont experienced a significant windstorm which resulted in power outages, downed branches and limbs, and the loss of 20 full-size City trees.

Probability of Future Events

While high impact wind incidents are not frequent in the area, significant wind events and sporadic tornado activity have been known to negatively impact the region. Based on the history of the region, windstorm events can be expected, perhaps annually, across widespread areas of the region which can be adversely impacted during a windstorm event.

Climate Change Considerations

According to the Fourth National Climate Assessment published in 2018[7], it is uncertain as to whether climate change has an impact on the frequency or severity of severe whether such as tornadoes or windstorms.

Impact of Windstorm on Claremont

Windstorms and tornadoes can significantly impact life and property, utilities, infrastructure, transportation and result in an increased fire threat.

Santa Ana wind conditions can lead to fire fanned by the high winds. Wind driven flames caused the destruction of more than 3,000 homes in Southern California in October 2003. Other forms of disaster include direct building damage, damage to utilities and infrastructure as a result of the high winds. This has occurred in the past few years in many Southland communities including Los Angeles County.

Life and Property

City of Claremont emergency response personnel would be involved if there is a wide-ranging windstorm or microburst tornadic activity. Both residential and commercial structures with weak reinforcement are susceptible to damage. Wind pressure creates a direct and frontal assault on a structure, pushing walls, doors, and windows inward. Conversely, passing currents creates lift suction forces that pull building components and surfaces outward. With extreme wind forces, the roof or entire building can fail causing considerable damage.

Debris carried along by extreme winds can directly contribute to loss of life and indirectly to the failure of protective building envelopes, siding, or walls. When severe windstorms strike a city, downed trees, power lines, and damaged property can be major hindrances to emergency response and disaster recovery.

Utilities

Historically, falling trees are the major cause of power outages in the region. Windstorms such as strong microbursts and Santa Ana wind conditions cause flying debris and downed utility lines. For example, tree limbs breaking in winds of only 45 mph can be thrown over 75 feet, overhead power lines are damaged, even in relatively minor

[7] https://nca2018.globalchange.gov/chapter/2/

windstorm events. Falling trees bring electric power lines down to the pavement, creating the possibility of lethal electric shock.

Infrastructure

Windstorms damage buildings, power lines, and other property, and infrastructure, due to falling trees and branches. During wet winters, saturated soils cause trees to become less stable and more vulnerable to uprooting from high winds.

Transportation

Windstorm activity impacts local transportation in addition to the problems caused by downed trees and electrical wires blocking streets and highways. During periods of extremely strong Santa Ana winds, major highways can be temporarily closed to truck and recreational vehicle traffic. However, typically these disruptions are not long lasting, nor do they carry a severe long term economic impact on the region.

Increased Fire Threat

Perhaps the greatest danger from windstorm activity in Southern California comes from the combination of the Santa Ana winds with the major fires that occur every few years in the urban/wildland interface. With the Santa Ana winds driving the flames, the speed and reach of the flames is even greater than in times of calm wind conditions.

Nonquantifiable Impacts

Impact that is not quantified, but can be anticipated in future events, include:

- ✓ Injury and loss of life
- ✓ Commercial and residential structural damage
- ✓ Disruption of and damage to public infrastructure
- ✓ Damage to roads/bridges resulting in loss of mobility
- ✓ Significant disruption to students and teachers as temporary facilities and relocations would likely be needed.

Summary of Claremont's Vulnerability to Windstorms

Severe windstorms pose a significant risk to life and property in Claremont by creating conditions that disrupt essential systems such as public utilities, telecommunications, and transportation routes. High winds can and do occasionally cause tornado-like damage to local homes and businesses in and near Claremont. High winds have the potential for a destructive impact, especially to trees, power lines, and utility services.

Section 5: Mitigation Strategy

Overview of Mitigation Strategy

The City of Claremont's Mitigation Strategy is derived from an in-depth review of the revised hazards, vulnerabilities and capabilities sections of this Plan, coupled with the Planning Team's vision for creating a disaster resilient and sustainable community.

The City of Claremont recognizes the importance of identifying effective ways to reduce vulnerability to disasters. Mitigation Plans assist communities in reducing risk from natural hazards and certain human caused hazards by identifying resources, information and strategies for risk reduction, while helping to guide and coordinate mitigation activities throughout the City. The Plan provides a set of action items to reduce risk from hazards.

The resources and information within the Mitigation Plan:

- Establish a basis for coordination and collaboration among agencies and the public in the City of Claremont
- Identify and prioritize future mitigation projects
- Assist in meeting the requirements of federal assistance programs

Current Mitigation Programs

The City intends to incorporate mitigation planning into many aspects of its daily operations. The Planning Team will work to integrate mitigation strategies into the general operations of the City and partner organizations.

This Plan works in concert with the City of Claremont General Plan, particularly the Safety Element, which is being updated concurrently (2021) to the development of this plan. The Safety Element creates a framework for mitigation and preparation activities and integrates with the goals of this Plan. The LHMP is an opportunity for the City to expand on the goals and policies in the General Plan, identifying specific mitigation actions to achieve the general plan's high-level objectives. The General Plan and the LHMP collectively help to reduce the threat from hazardous conditions to Claremont residents, businesses, visitors, buildings and facilities, infrastructure, key services, ecosystems, and other assets. This plan is also integrated with other City plans including the City of Claremont Emergency Operations Plan and the Capital Improvement Plan, as well as department specific standard operating procedures.

Table 14: Existing Processes and Programs identifies existing planning and regulatory, administrative and technical, financial, and education and outreach capabilities through which the plan could be implemented. While at this time there is limited money and resources to expand on these capabilities, several opportunities to expand the existing capabilities have been identified.

Table 14: Existing Processes and Programs

Process	Action	Implementation of Plan
Administrative and Technical	Departmental or organizational work plans, policies, and procedural changes	• City Manager's Office • Planning Department • Community Development Department • Public Works Department • Other departments as appropriate
Administrative and Technical	Other plans	• Reference plan in Emergency Operations Plan • Address plan findings and incorporate mitigation activities in General Plan Opportunity for Expansion: • Consider expanding cyber security expertise, including possibly bringing in a consultant
Education and Outreach	Creative funding and initiatives	• Community volunteers • In-kind resources • Public-private partnerships • State support Opportunities for Expansion: • Integrate further with Sustainability Committee • Expand emergency preparedness awareness and knowledge through neighborhood education and CERT classes.
Education and Outreach	Advisory bodies and committees	• Disaster Council (city and county) • Emergency Management Ad Hoc Committee • Inter-Agency Coordination Group • Safety Committee
Financial	Capital and operational budgets	• Include line-item mitigation measures in budget as appropriate
Financial	Traditional and nontraditional sources	• Once plan is approved, seek authority to use bonds, fees, loans, and taxes to finance projects • Seek assistance from federal and state government, foundation, nonprofit, and private sources, such as Hazard Mitigation Grant Program

Process	Action	Implementation of Plan
		Opportunities for Expansion: • Research new grant opportunities through U.S. Department of Housing and Urban Development, Community Development Block Grant. • Pursue state surplus funding opportunities
Planning and Regulatory	Executive orders, ordinances, and other directives	• Building Code • Comprehensive Planning (Institutionalize hazard mitigation in land use and new construction) • National Flood Insurance Program • Storm Water Management Plan • Zoning Ordinance Opportunity for Expansion • Require hazard mitigation in design of new construction in the Capital Improvement Plan • Review and update Zoning Ordinance • Implement new plans that are developed and shared by other state, local and federal agencies

City of Claremont General Plan

The Planning Team went to great lengths to examine the various regulatory documents influencing the City's ability to mitigate against the identified hazards. Perhaps, the most important of those documents was the City's General Plan, last updated in 2009 and currently being updated by the City. It is the intention of the Planning Team to link the Mitigation Plan actions items as closely as possible to the City's General Plan. The purpose of this association is that many development projects require a determination of "General Plan conformity" prior to approval. If the Mitigation Plan and General Plan are aligned, this will better ensure both the sustainability and implementation of the Mitigation Plan. Since the establishment of the DMA 2000 regulations, FEMA and other regulators have been frustrated by the ineffectiveness of mitigation plan implementation – in other words, the failure of plans to actually affect the built environment and cause a reduction in risk. The Planning Team believes that changing the circle of build-damage-rebuild can most effectively be broken by linking the Mitigation Plan to the regulations and policy guidelines that allow for construction and land use.

Following is a list of mitigation policies drawn from the 2009 General Plan.

Table 15: General Plan Policies

GENERAL PLAN POLICIES (Note: Each of the policies includes a brief explanation as to applicability to the Local Hazard Mitigation Plan)	MITIGATION PLAN GOALS				
	Protect Life and Property	Public Awareness	Natural Systems	Partnerships and Implementation	Emergency Services
SAFETY ELEMENT					
Goal: 6-2 Minimize the risk of injury, loss of life, and damage to property resulting from natural and human-caused disasters and conditions. **Policies:** 6-2.1 Practice proactive planning and development approaches that require developers to identify potential hazards that might affect a development and mitigate the potential hazards as needed to the satisfaction of the City. 6-2.2 Enforce Uniform Building Code standards for grading. 6-2.3 Review and explore disaster preparedness and emergency response capabilities on a regular basis. 6-2.4 Cooperate with and coordinate emergency preparedness and response programs with jurisdictions, agencies, and organizations such as surrounding cities, The Claremont Colleges, the Claremont School District, and the Los Angeles County Fire Department. 6-2.5 Continue and expand public educational programs to include all aspects of public safety. 6-2.6 Maintain a list of public buildings that could support emergency functions in the event of a disaster. 6-2.7 Require that development of major facilities and high-occupancy buildings in the hazardous zone submit design analysis, soils, geologic, and seismic reports to the City to indicate that an undue hazard does not exist or would not result from construction on the property. 6-2.8 Continually review the City's disaster communication system, and update/modify as needed. 6-2.9 Continue to implement the City's hillside plan to reduce harm to future residents at the urban interface.	X	X	X	X	X

GENERAL PLAN POLICIES (Note: Each of the policies includes a brief explanation as to applicability to the Local Hazard Mitigation Plan)	MITIGATION PLAN GOALS				
	Protect Life and Property	Public Awareness	Natural Systems	Partnerships and Implementation	Emergency Services
6-2.10 Restrict vehicular and recreational use of the undeveloped foothill areas during critically hazardous periods.					
Goal: 6-4 Minimize risks to public safety from seismic events. **Policies:** 6-4.1 Enforce the most recent building codes governing seismic safety and structural design to minimize damage from earthquakes. 6-4.2 Continue to support efforts to identify location, potential activity, and dangers associated with faults under investigation, and implement recommendations (setbacks, foundation/building design methods, etc.) contained in geotechnical reports.	X	X	X	X	X
Goal: 6-5 Minimize risks to public safety from geologic events. **Policies:** 6-5.1 Require geotechnical evaluation and recommendations prior to new development, as appropriate. Such geotechnical evaluation shall analyze the potential hazards from: Landslides, Liquefaction, Expansive soils, Mud and debris flow Recommendations shall include mitigation to avoid or minimize the identified hazards.	X	X	X	X	X
Goal: 6-6 Minimize the risks associated with storm flooding and dam inundation. **Policies:** 6-6.1 Work with the U.S. Army Corps of Engineers and Los Angeles County to ensure dam structures are upgraded as	X	X	X	X	X

GENERAL PLAN POLICIES (Note: Each of the policies includes a brief explanation as to applicability to the Local Hazard Mitigation Plan)	MITIGATION PLAN GOALS				
	Protect Life and Property	Public Awareness	Natural Systems	Partnerships and Implementation	Emergency Services
needed to withstand earthquakes and prevent inundation of downstream areas. 6-6.2 Work with the U.S. Army Corps of Engineers and Los Angeles County to encourage regular maintenance and monitoring of flood-control facilities. 6-6.3 Complete the Chicken Creek flood control measures, and transfer operations and management to Los Angeles County.					
Goal: 6-7 Minimize the risks associated with urban and wildland fires. **Policies:** 6-7.1 Work with the Fire Department to establish minimum standards for water supply and access for fire-fighting equipment. 6.7-2 Work with Fire Department to enforce restrictions on vehicular and recreational use of foothill areas during critically hazardous periods. 6-7.3 Enforce building fire codes and ordinances, and continue to research and adopt best practices pertaining to fire management and fire hazards. 6-7.4 Work with the Fire Department to establish an aggressive fire inspection and code enforcement program. 6-7.5 Continue to disseminate information relating to fire prevention measures and resident response to emergency situations, with the understanding that an informed public can greatly aid in the reduction of fire loss. 6-7.6 Continue to work with Los Angeles County Weed Abatement Division to implement and enforce the county's systematic weed abatement program.	X	X	X	X	X

GENERAL PLAN POLICIES (Note: Each of the policies includes a brief explanation as to applicability to the Local Hazard Mitigation Plan)	MITIGATION PLAN GOALS				
	Protect Life and Property	Public Awareness	Natural Systems	Partnerships and Implementation	Emergency Services
Goal: 6-8 Minimize the improper storage and dumping of hazardous waste materials. **Policies:** 6-8.1 Educate residents regarding the types of household hazardous waste and proper manners of disposal, and continue to have yearly hazardous waste round-ups. 6-8.2 Utilize the Los Angeles County Hazardous Waste Management Plan as a guide to future hazardous waste management planning efforts. 6-8.3 Continue to require that all proposals for businesses involved in hazardous materials use, storage, or transport areas submit a hazards safety plan to appropriate City agencies, and the County Fire Department for review of potential hazards. 6-8.4 Inform residents about the dangers of improper disposal of hazardous materials.	X	X	X	X	X
Goal: 6-9 Provide effective and comprehensive policing services and enforce laws in an equitable way. **Policies:** 6-9.1 Provide a state-of-the-art Police Station and up-to-date emergency communications technology for the Claremont Police Department. 6-9.2 Continue to encourage design concepts that inhibit criminal behaviors. 6-9.3 Provide timely responses to emergency and non-emergency calls for service 24 hours a day. 6-9.4 Strive for the smooth and efficient movement of traffic throughout the community. 6-9.5 Recruit, hire, and train personnel to provide public service in an unbiased manner. 6-9.6 Continue to develop and implement community oriented Policing Project to foster accountability, mutual	X	X	X	X	X

GENERAL PLAN POLICIES (Note: Each of the policies includes a brief explanation as to applicability to the Local Hazard Mitigation Plan)	MITIGATION PLAN GOALS				
	Protect Life and Property	Public Awareness	Natural Systems	Partnerships and Implementation	Emergency Services
trust, and respect between the community and the Police Department. 6-9.7 Assign personnel and resources, such that each police patrol unit can maintain 30 to 35 percent "free patrol" time to provide preventative crime patrol, proactive traffic enforcement and regulation, and community-oriented public safety service. 6-9.8 Initiate proactive crime suppression and prevention strategies throughout the community. 6-9.9 Provide additional, cost-effective public safety services through the utilization of volunteers in our Police Reserve Officer, Community Patrol Volunteer Program, Explorer Program, Traumatic Intervention Service, Chaplain Volunteer Program, and Community Emergency Response Team (CERT). 6-9.10 Participate in school liaison activities such as Healthy Start Collaborative Program (School Resource Officer), on-campus probation officer, Drug Abuse Resistance Education (D.A.R.E.), Adopt-a-Cop, Red Ribbon Week, School Attendance Review Board (SARB), and other joint police/school district projects that may be developed in the future. 6-9.11 Participate in community outreach activities such as Neighborhood Watch, Business Crime Watch, security surveys, crime prevention presentations, Cubs for Kids, Designated Driver, Bike Safety Rodeos, CERT, Citizen's Academy, and other activities that may be developed in the future. 6-9.12 Continue to monitor gang activities in the community, and work with surrounding jurisdictions and outside groups and organizations to prevent criminal activities and gang violence.					
Goal: 6-10 Strive to maintain the highest level of emergency preparedness for natural and human-caused disasters and threats.	X	X	X	X	X

GENERAL PLAN POLICIES (Note: Each of the policies includes a brief explanation as to applicability to the Local Hazard Mitigation Plan)	MITIGATION PLAN GOALS				
	Protect Life and Property	Public Awareness	Natural Systems	Partnerships and Implementation	Emergency Services
Policies: 6-10.1 Educate residents of hazards and threats addressed in the Claremont Emergency Plan/SEMS Multi-hazard Functional Plan and the Natural Hazard Mitigation Basic Plan, and use these plans as a guide to prevention and mitigation of natural and human-caused hazards. 6-10.2 Educate City staff to follow established procedures and responsibilities stated in the Emergency Plan/SEMS Multi-hazard Functional Plan and the Natural Hazard Mitigation Basic Plan in the event of an emergency. 6-10.3 Complete implementation of a reverse 911 system to facilitate evacuation in case of an emergency. 6-10.4 Respond to emergency calls for service within an average of less than four minutes. 6-10.5 Work to ensure the adequacy of disaster response and coordination of all segments and populations in the community. 6-10.6 Continue to have a paramedic squad assigned within Claremont boundaries.					

National Flood Insurance Program

The City of Claremont participates in the National Flood Insurance Program (NFIP). Established by Congress in 1968, the NFIP provides federally-backed flood insurance to homeowners, renters, and businesses in communities that adopt and enforce floodplain management ordinances to reduce future flood damage. The City of Claremont adopted a floodplain management ordinance and has Flood Insurance Rate Maps (FIRM) that show floodways, 100-year flood zones, and 500-year flood zones. The FEMA FIRM maps for the City of Claremont were last updated September 26, 2008 (See *Flooding Hazard Analysis).*

The City has been designated as NSFHA (No Special Flood Hazard Area). As of the end of April 2021[8], there were 38 properties in Claremont insured under NFIP, with a total insured value of approximately $11.4 million. Since the start of the program, there have been 5 claims reported within Claremont with a total amount of payments issued totally $6,485.

Goals

The Planning Team reviewed and validated the mitigation goals established in the prior plan. Based on current hazard profiles and knowledge of existing vulnerabilities and capabilities, appropriate revisions were made to the goals and relevant action items. The goals are based on the risk assessment and represent a long-term vision for hazard reduction or enhanced mitigation capabilities. They are compatible with community needs and goals expressed in other planning documents prepared by the City.

Each goal is supported by mitigation action items. The Planning Team developed these action items through its knowledge of the local area, risk assessment, review of past efforts, identification of mitigation activities, and qualitative analysis.

The five mitigation goals are as follows:

1. **Protect Life and Property**
   - Implement activities that assist in protecting lives by making homes, businesses, infrastructure, critical facilities, and other property more resistant to losses from natural, human-caused, and technological hazards.

   - Improve hazard assessment information to make recommendations for avoiding new development in high hazard areas and encouraging preventative measures for existing development in areas vulnerable to natural, human-caused, and technological hazards.

2. **Enhance Public Awareness**
   - Develop and implement education and outreach programs to increase public awareness of the risks associated with natural, human-caused, and technological hazards.

   - Provide information on tools; partnership opportunities, and funding resources to assist in implementing mitigation activities.

3. **Preserve Natural Systems**
   - Support management and land use planning practices with hazard mitigation to protect life.

[8] NFIP Policy and Loss Data by Geography (HUDEX) as of 4/30/21 Accessed: https://nfipservices.floodsmart.gov/reports-flood-insurance-data

- Preserve, rehabilitate, and enhance natural systems to serve hazard mitigation functions.

4. Encourage Partnerships and Implementation

- Strengthen communication and coordinate participation with public agencies, citizens, non-profit organizations, business, and industry to support implementation.

- Encourage leadership within the City and public organizations to prioritize and implement local and regional hazard mitigation activities.

5. Strengthen Emergency Services

- Establish policy to ensure mitigation projects for critical facilities, services, and infrastructure.

- Strengthen emergency operations by increasing collaboration and coordination among public agencies, non-profit organizations, business, and industry.

- Coordinate and integrate hazard mitigation activities where appropriate, with emergency operations plans and procedures.

Mitigation Action Items

The action items are a listing of activities in which City agencies and citizens can be engaged to reduce risk. Each action item includes an estimate of the timeline for implementation.

The action items are organized within the following Mitigation Actions Matrix, which lists all of the multi-hazard (actions that reduce risks for more than one specific hazard) and hazard-specific action items included in the mitigation plan. Data collection and research and the public participation process resulted in the development of these action items (**Section 3: Planning Process**).

To address these hazards, the Planning Team identified 30 mitigation projects across the following categories:

- Multi-Hazard (MH)
- Fire (FR)
- Earthquake (EQ)
- Severe Weather – includes Windstorm (SW)
- Flood (FLD)
- Landslide (LND)
- Cyber (CYB)

While the Planning Team identified drought as a hazard, there were no specific mitigation action items were identified as it was the lowest priority hazard and resources are limited.

The City will continue to evaluate this hazard during the annual review of the LHMP and will consider adding mitigation action items as they are identified.

The Mitigation Actions Matrix includes the following information for each action item:

Funding Source

The action items can be funded through a variety of sources, possibly including operating budget/general fund, development fees, Community Development Block Grant (CDBG), other Grants, private funding, Capital Improvement Plan, and other funding opportunities.

Potential FEMA Grant Funding Sources include:

Hazard Mitigation Grant Program (HMGP): FEMA's Hazard Mitigation Grant Program provides funding to state, local, tribal and territorial governments so they can rebuild in a way that reduces, or mitigates, future disaster losses in their communities. This grant funding is available after a presidentially declared disaster.

Flood Mitigation Assistance (FMA): The Flood Mitigation Assistance Program is a competitive grant program that provides funding to states, local communities, federally recognized tribes and territories. Funds can be used for projects that reduce or eliminate the risk of repetitive flood damage to buildings insured by the National Flood Insurance Program.

Building Resilient Infrastructure and Communities (BRIC): Building Resilient Infrastructure and Communities will support states, local communities, tribes and territories as they undertake hazard mitigation projects, reducing the risks they face from disasters and natural hazards.

Coordinating Organization

The Mitigation Actions Matrix assigns primary responsibility for each of the action items. The hierarchies of the assignments vary – some are positions, others departments, and other committees. The primary responsibility for implementing the action items falls to the entity shown as the "Coordinating Organization." The coordinating organization is the agency with regulatory responsibility to address hazards, or that is willing and able to organize resources, find appropriate funding, or oversee activity implementation, monitoring, and evaluation. Coordinating organizations may include local, county, or regional agencies that are capable of or responsible for implementing activities and programs.

Plan Goals Addressed

The Plan goals addressed by each action item are included to monitor and evaluate how well the mitigation plan is achieving its goals once implementation begins.

The Plan goals are organized into the following five areas:

- ✓ Protect Life and Property

- ✓ Enhance Public Awareness
- ✓ Preserve Natural Systems
- ✓ Encourage Partnerships and Implementation
- ✓ Strengthen Emergency Services

Economic Analysis of Mitigation Projects

FEMA's approach to identify the costs and benefits associated with hazard mitigation strategies, measures, or projects fall into two general categories: benefit/cost analysis and cost-effectiveness analysis.

Conducting benefit/cost analysis for a mitigation activity can assist communities in determining whether a project is worth undertaking now, in order to avoid disaster-related damages later. Cost-effectiveness analysis evaluates how best to spend a given amount of money to achieve a specific goal. Determining the economic feasibility of mitigating hazards can provide decision-makers with an understanding of the potential benefits and costs of an activity, as well as a basis upon which to compare alternative projects.

For federal funded projects, the Planning Team will use a FEMA-approved benefit/cost analysis approach to identify and prioritize mitigation action items. For other projects and funding sources, the Planning Team will use other approaches to understand the costs and benefits of each action item and develop a prioritized list.

Ranking Priorities

To assist with implementing the Hazard Mitigation Plan the Planning Team adopted the following process for ranking mitigation action items. Designations of “High”, “Medium”, and “Low” priority have been assigned to each action item using the following criteria:

Does the Action:

- solve the problem?
- address Vulnerability Assessment?
- reduce the exposure or vulnerability to the highest priority hazard?
- address multiple hazards?
- benefits equal or exceed costs?
- implement a goal, policy, or project identified in the General Plan or Capital Improvement Plan?

Can the Action:

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

Will the Action:

- be accepted by the community?
- be supported by community leaders?
- adversely impact segments of the population or neighborhoods?
- require a change in local ordinances or zoning laws?
- positive or neutral impact on the environment?
- comply with all local, state and federal environmental laws and regulations?

Is there:

- sufficient staffing to undertake the project?
- existing authority to undertake the project?

Answers to the criteria above determined the priority according to the following scale:

Priority Ranking	Scale
Low Priority	1-6
Medium Priority	7-12
High Priority	13-18

The Planning Team met to review the prioritization of current projects as well as the prioritization of new mitigation projects that were added. The Planning Team reviewed the criteria and affirmed the prioritization of ongoing or delayed projects and ranked new projects accordingly.

Mitigation Actions Matrix

Following is Table 16: Mitigation Actions Matrix which identifies the existing and future mitigation activities developed by the Planning Team.

Table 16: Mitigation Actions Matrix

Action Item	Accomplishments (+) and Ideas for Implementation (-)	Responsible Entity	Timeframe	Funding Source (GF=General Fund, GR=Grant, Other as Noted)	Ranking (H=High, M=Medium, L=Low)
Multi-Hazard Action Items					
MH-1 Emergency Training	+ Continue to conduct training and coordinate mock emergency exercises so that emergency responders are prepared.	Police Department - Emergency Services Coordinator	Ongoing	GF	H
MH-2 Community Outreach	+ Provide information regarding local hazards and steps residents can take to be prepared: • Claremont CERT • City Website • Social Media and other publications	Police Department- Emergency Services Coordinator, Local Chapter American Red Cross, Fire Department	Ongoing	GF	H
MH-3 Alerts and Warning	+ Continue to use Everbridge for emergency notifications. + Continue to use social media to disseminate hazards and information regarding emergency situations.	Police Department	Ongoing	GF, GR	H
MH-4 Zoning and General Plan	- Review land use designations for identified hazard areas in order to minimize development density in disaster-prone areas while recognizing the private	Community Development Department - Planning Division through the	Ongoing	GF	H

	property owner's rights. The only mapped areas presently are for liquefaction.	General Plan update process			
MH-5 Backup Power	+ Continue to maintain emergency electrical backup for City facilities.	Community Services Department	Ongoing	GF	H
MH-6 New Backup Power	- Provide emergency electrical backup to Joslyn Center.	Police Department	5 years	GR, FEMA BRIC	H
MH-7 Amend Building and Fire Codes	+ Amend building and fire codes for commercial and residential buildings to align with revisions from the California Building Codes or other mandatory guidance.	Community Development Department - Building Division	Ongoing	GF	H
MH-8 Development Review	+ Design roads with sufficient width and number of access points to facilitate the safe egress from disaster-prone areas in an expeditious fashion while allowing emergency personnel clear access into the disaster area	Community Development Department - Engineering and Planning Divisions, County of Los Angeles Public Works, Los Angeles County Fire, other Partnering Agencies	Ongoing	GF, GR FEMA BRIC	H
MH-9 Capital Improvement Plan	+ Continue to consider means to minimize the impacts from hazards when updating the CIP, including:	Community Services Department, Community	Ongoing	GF	H

	• Development/extension of roads and other critical infrastructure into disaster-prone areas in a manner that reduces vulnerability. • Upgrading the sizes of culverts or installation of new drainage structures to eliminate the ponding of water on roads • Other means of minimizing impacts of hazards	Development Department			
MH-10 American Red Cross Shelter Readiness Program	+ Participate in the American Red Cross Shelter Readiness Program • Establish a Facility Use Agreement	Police Department	1 Year	GF	H
MH-11 Resiliency Project	- Implement solar power with battery backup to help with resiliency at several City facilities including Hughes Center, City Yard, Police Department and Taylor Hall (Part of Trane Energy Improvement Project).	Community Services Department	2 Years	Other: Cash flow neutral project funded by repayable loans that will be offset and paid for by energy, operations, and maintenance savings	H
Fire Action Items					

FR-1 Fire Mitigation and Community Preparedness Outreach	+ Continue to update the Community about fire mitigation efforts on the City website, social media, weekly updates, and a quarterly newsletter in order to: • Encourage property owners in the Urban Interface area to conduct brush clearance in accordance with Los Angeles County Fire Department Standards. The Los Angeles County Fire Department will conduct brush inspections during the fire season in addition to inspecting hydrants and helicopter spots. • Encourage homeowners to have their chimneys inspected and cleaned. • Encourage property owners in the Urban Interface areas to remove cumulative debris that could contribute to the spread of wildfires. • Encourage residents to change the batteries regularly in their smoke detectors. In addition, have an operable fire home fire extinguisher.	Administrative Services/ Public Information Officer, Los Angeles County Fire Department	Ongoing	GF	H

	• Educate residents regarding the proper evacuation procedures by encouraging them to develop an evacuation plans and practice emergency drills.				
FR-2 Fire Extinguisher Training	+ Offer fire extinguisher training for City personnel; training is scheduled annually with fire equipment recharging.	Police Department-Emergency Services Coordinator, CERT	Ongoing	GF	H
FR-3 General Water Infrastructure	- Install water infrastructure improvements in support of fire flows in the Claraboya area	Golden State Water	3 years	Private Enterprise Funds	H
FR-4 Tree Removal	- As a fire prevention measure, remove the Eucalyptus trees in Sycamore Canyon.	Community Services Department	5 years	GR	M
FR-5 Brush Clearance	+ Every May the Fire Department notifies brush clearance directives to private property owners.	Los Angeles County Fire Department	Annually	GF	L
FR-6 Brush Clearance	- Fund brush clearing project for City-owned properties.	Community Services	Annually	GF, GR	H
Earthquake Action Items					
EQ-1 Hillside Ordinance	+ Continue to implement existing hillside ordinance that clusters development and creates open space. When homes are developed in accordance with the City's hillside ordinance, care will be taken in the siting of the home to	Community Development Department - Planning Division	Ongoing	GF	L

	be setback from the slopes outside of the "convection cone" of intense heat. The City will work with the local Fire authority in determining the appropriate placement of homes.				
EQ-2 Grading Plans	+ Continue to require grading plans and geotechnical reports for development	Community Development Department - Engineering Division	Ongoing	GF	L
EQ-3 Police Station	- Identify funding to perform seismic and safety retrofits to the Police Station and/or identify funding to replace the existing facility.	Police Department	5 years	GF	H
Severe Weather Action Items					
SW-1 Street Tree Management	+ Continue to regularly prune trees and inspect for disease in accordance with the City's established tree maintenance policies	Community Services Department	Ongoing	GF, Landscape and Lighting District (LLD) for Tree Maintenance	H
SW-2 Underground Utilities	+ Continue to require the undergrounding of utilities with new construction. Also, explore funding programs/methods to underground existing overhead utility lines throughout the City	Community Development Department	Ongoing	GF, GR FEMA BRIC	H
SW-3 Retrofit A/C Units	- Retrofit air conditioning units in City facilities to be compatible with emergency backup generators.	Community Services Department	3 years	Repayable loans that would be offset and	H

				paid for by energy, operations and maintenance savings	
Flood Action Items					
FLD-1 Drainage System maintenance	+ Review and maintain local drainage facilities to ensure adequate carrying capacity during times of storms	Community Services Department, Community Development Department – Engineering, Los Angeles County Department of Public Works	Ongoing	GF, GR FEMA FMA	H
FLD-2 Flood insurance	+ Encourage local homeowners to purchase flood insurance as needed + Inform FEMA as modifications/ upgrades are made to our municipal storm drain system	Community Development Department - Engineering Division	Ongoing	GF	H
FLD-3 On-site Drainage facilities	+ Continue to implement the requirements of the National Pollutant Discharge Elimination System municipal permit for new development, including retention of the first ¾" rainfall as required (1 acre and above)	Community Development Department - Engineering Division	Ongoing	GF	H
Landslide Action Items					

LND-1 Debris clearance	+ Continue to clear debris to ensure efficient functioning of drainage system.	Community Services	Ongoing	GF	H
Cyber Action Items					
CYB-1 Cyber Security Training	- Ensure training protocols reflect current and industry best practices in the fields of cyber, information, and critical infrastructure security. Where necessary or applicable, integrate cyber-security training in staff's professional annual training/development goals and/or performance reviews.	Administrative Services	1-2 years	GF	H
CYB-2 Employee Training	- Establish and conduct annual employee training on privacy and security policies and incident response procedures	Administrative Services/ Information Technology	1-2 years	GF	H
CYB-3 Back up System	- Purchase cloud-based back-up system to simplify disaster recovery efforts.	Administrative Services/ Information Technology	3 years	GF	H

Section 6: Plan Update

Planning Update

When conducting the update, the Planning Team reviewed the entire plan to ensure the information is current. There have been no changes in development that impacted Claremont's vulnerability to hazards since 2015. The Planning Team also reviewed the priorities and validated the priorities in the previously approved plan. Additionally, as detailed in **Section 2: Planning Process,** the Planning Team updated the hazards to include Cyber Disruption and Drought, and also evaluated Climate Change in the Risk Assessment for all hazards. This updated plan reflects the progress in local mitigation efforts, as outlined in the Mitigation Progress Report below.

Mitigation Progress Report

In the prior plan, the Hazard Mitigation Planning Team identified five natural hazards on which to focus their mitigation efforts. The hazards identified were earthquakes, flooding, wildfires, landslides, and windstorms. To address these hazards, the prior Planning Team identified 29 mitigation projects across the following categories:

- Multi-Hazard (MH)
- Fire (FR)
- Earthquake (EQ)
- Severe Weather (SW)
- Flood (FLD)
- Landslide (LND)

The City's mitigation strategy is derived from an 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 community for the future. This vision is based on informed assumptions, recognition of both mitigation challenges and opportunities and demonstrated by the goals and objectives outlined below. The mitigation measures identified under each objective include an implementation plan for each measure.

During the 2021 update, the Planning Team met to review the existing mitigation strategy and determine if the Plan needed to be revised. During the meeting, the Planning Team determined whether projects were completed, deferred, ongoing or no longer relevant. (See Table 20: Status of 2015 Mitigation Actions Matrix).

Eighteen mitigation action projects were designated as ongoing with relevant priorities. Several of ongoing projects were updated to reflect current efforts.

Three projects were completed and therefore were removed from the 2021 Mitigation Actions Matrix.

Five projects were deferred due to scheduling or funding delays and were included in the 2021 Mitigation Actions Matrix.

Table 17: Deferred Mitigation Action Projects

Project	Reason for Deferral
MH-4 Zoning and General Plan Review land use designations for identified hazard areas in order to minimize development density in disaster-prone areas while recognizing the private property owner's rights. The only mapped areas presently are for liquefaction.	This item will be addressed during the revision to the General Plan Safety Element. Expected completion of this item is by 2022.
MH-6 New Backup Power Provide emergency electrical backup to Joslyn Center.	This item has been delayed due to lack of funding. Staff has applied for two grants that have not been successful. Claremont will continue to seek grant funding for this item and has set a 5-year timeline for completion.
FR-3 General Water Infrastructure Install water infrastructure for use during wildfires including water tank and access road above Claraboya area.	Golden State Water is currently designing water system infrastructure improvements in support of fire flows in the Claraboya area. The goal is to bid and construct these improvements in the fall of 2021 thru the spring of 2022. This item was updated accordingly.
FR-4 Tree Removal - As a fire prevention measure, remove the Eucalyptus trees in Sycamore Canyon.	This item is being addressed with the Sycamore Canyon Trail Project. Phase One was completed and Claremont is still working on funding and plans for Phase Two. Utilizing Proposition A funding, Phase One of the Sycamore Canyon trail repair project was completed. This primarily consisted of relocating the trail head and the installation of dozens of new steps. This work consisted of approximately 400 ft. of trail work. Of the 139 Eucalyptus trees in the canyon, 35 were removed as part of Phase One. Phase Two of this project will consist of additional trail work along the remaining 3,785.57ft. of trail. This work will ensure the

	trail is safe and accessible for all visitors for years to come.
SW-3 Retrofit A/C Units Retrofit air conditioning units in City facilities to be compatible with emergency backup generators.	This project has been delayed due to funding restraints. The City recently completed an energy audit and is exploring a comprehensive project to replace A/C units, solar, and battery backup at multiple City facilities. The feasibility of having A/C units to run on battery backup or generators will be evaluated as part of this project development. Pending financing, this project will proceed in 2021-22.

Three projects were deleted as the Planning Team deemed they were no longer relevant.

Table 18: Removed Mitigation Action Projects

Project	Reason for Deletion
EQ-3 Retrofit Interchange - Seismic retrofit of interchange at Indian Hill Boulevard and Interstate 10	This bridge is rated good for seismic vulnerability and therefore is not on the priority list for CalTrans to retrofit.
LND-1 Landslide Prevention - Mitigate against landslide danger at Mt. Baldy Road and Fergus Falls	This item is no longer relevant as there is no planned work.
LND-3 Thompson Creek - Improvements to Thompson Creek Trail to eliminate debris accumulation and overflow (Mt. Avenue and Pomello)	This item is no longer relevant. The trail does not need improvements to eliminate debris accumulation though as it is a walking trail that is not highly susceptible to overflow.

Table 19: Status of 2015 Mitigation Action Projects

Mitigation Project	Completed	Removed	Deferred	Ongoing	Funding Source	Timeframe	Priority Ranking
Multi-Hazard Projects							
MH-1 Emergency Training +The City will continue to conduct training and coordinate mock emergency exercises so that emergency responders are prepared.				X	GF	Ongoing	High
MH-2 Community Outreach + Partner with outside agencies to provide information regarding local hazards and steps residents can take to be prepared. • Claremont CERT • Brochures on Website				X	GF	Ongoing	High
MH-3 Review of Technology + Purchased an electronic early warning system in order to notify residents of impending emergencies or to distribute critical information. + Purchased a reverse 9-1-1 type system to warn residents of any potential hazards (Everbridge). + Neighborhood eWatch	X				GF, GR	Ongoing	High
MH-4 Zoning and General Plan - Review land use designations for identified hazard areas in order to minimize development density in disaster-prone areas while recognizing the private property owner's rights. The only mapped areas presently are for liquefaction.			X		GF	Ongoing	High
MH-5 Backup Power + Continue to maintain emergency electrical backup for City facilities.				X	GF	Ongoing	High
MH-6 New Backup Power			X		GR	1 Year	High

Mitigation Project	Completed	Removed	Deferred	Ongoing	Funding Source	Timeframe	Priority Ranking
- Provide emergency electrical backup to Joslyn Center.							
MH-7 Amend Building and Fire Codes + Amended Codes for commercial buildings. Now required to be sprinklered if building is greater than 10,000 square feet.				X	GF	Ongoing	High
MH-8 Additional Amendments to existing local Building and Fire Codes - Explore the possibility of amending the local Building Codes to include the following provisions: • Dry Flood-proofing • Wet Flood-proofing • Pad Elevations above flood levels • Strapping foundations • Tying down manufactured homes • Use of post tensioned slabs in liquefaction areas.	X				GF/GR	Ongoing	Medium
MH-9 Capital Improvement Program (CIP) + Continue to biennially update the following items: • Development/extension of roads and other critical infrastructure into disaster-prone areas in a manner that reduces vulnerability. • Upgrading the sizes of culverts or installation of new drainage structures to eliminate the ponding of water on roads • Repair and maintain drainage swales when damaged from extensive rainfall • Other means of minimizing impacts of hazards				X	GF	Biannually	High

Mitigation Project	Completed	Removed	Deferred	Ongoing	Funding Source	Timeframe	Priority Ranking
MH-10 Development Review + Roads should be designed of sufficient width and number of access points to facilitate the safe egress from disaster-prone areas in an expeditious fashion while allowing emergency personnel clear access into the disaster area				X	GF	Ongoing	High
MH-11 Road Improvement - Seek funding and improve infrastructure at Webb Canyon and Mt. Baldy including road widening, culverts, and drainage improvements	X				GR	5 Years	High
Fire Projects							
FR-1 Property Maintenance The City will include yearly reminder in the City newsletter and on the City website to: • Encourage property owners in the Urban Interface area to conduct brush clearance in accordance with Los Angeles County Fire Department Standards. The Los Angeles County Fire Department will conduct brush inspections during the fire season in addition to inspecting hydrants and helicopter spots. • Encourage homeowners to have their chimneys inspected and cleaned. • Encourage property owners in the Urban Interface areas to remove cumulative debris that could contribute to the spread of wildfires.				X	GF	Ongoing	High

Mitigation Project	Completed	Removed	Deferred	Ongoing	Funding Source	Timeframe	Priority Ranking
• Encourage residents to change the batteries regularly in their smoke detectors. In addition, have an operable fire home fire extinguisher. • Encourage residents regarding the proper evacuation procedures by creating an evacuation education and drill program for residents							
FR-2 Fire Extinguisher Training + The City offers fire extinguisher training for its residents and City personnel. Schedule annually with fire equipment recharging.				X	GF	Ongoing	High
FR-3 General Water Infrastructure **-** Install water infrastructure for use during wildfires including water tank and access road above Claraboya area.			X		Private Enterprise Funds, GR	5 years	High
FR-4 Tree Removal - As a fire prevention measure, remove the Eucalyptus trees in Sycamore Canyon.			X		GR	5 years	Medium
FR-5 Brush Clearance + Every May the Fire Department notifies brush clearance directives to private property owners.				X	GF	Annual	Low
FR-6 Brush Clearance - Fund brush clearing project for City-owned properties.				X	GF, GR	Annual	High
Earthquake Projects							

Mitigation Project	Completed	Removed	Deferred	Ongoing	Funding Source	Timeframe	Priority Ranking
EQ-1 Hillside Ordinance + Continue to implement existing hillside ordinance that clusters development and creates open space. When homes are developed in accordance with the City's hillside ordinance, care will be taken in the siting of the home to be setback from the slopes outside of the "convection cone" of intense heat. The City will work with the local Fire authority in determining the appropriate placement of homes.				X	GF	Ongoing	Low
EQ-2 Grading Plans + Continue to require grading plans and geotechnical reports for development.				X	GF	Ongoing	Low
EQ-3 Retrofit Interchange - Seismic retrofit of interchange at Indian Hill Boulevard and Interstate 10.		X			GR	5 years	High
Severe Weather Projects							
SW-1 Street Tree Management + Continue to regularly prune trees and inspect for disease in accordance with the City's established tree maintenance policies.				X	GF, GR	Ongoing	High
SW-2 Underground Utilities + Continue to require the undergrounding of utilities with new construction. Also, explore funding programs/methods to underground existing overhead utility lines throughout the City				X	GF	Ongoing	High
SW-3 Retrofit A/C Units - Retrofit air conditioning units in City facilities to be compatible with emergency backup generators.			X		GR	1 Year	High

Mitigation Project	Completed	Removed	Deferred	Ongoing	Funding Source	Timeframe	Priority Ranking
Flood Projects							
FLD-1 Drainage System Maintenance + Review and maintain local drainage facilities to ensure adequate carrying capacity during times of storms				X	GF	Ongoing	High
FLD-2 Flood Insurance + Encourage local homeowners to purchase flood insurance as needed. + Inform FEMA as modifications/ upgrades are made to our municipal storm drain system and to remap portion of Flood Zone D areas.				X	GF	Ongoing	High
FLD-3 On-site Drainage Facilities + Continue to implement the requirements of the National Pollutant Discharge Elimination System municipal permit for new development, including retention of the first ¾" rainfall as required (1 acre and above).				X			
Landslide Projects							
LND-1 Landslide Prevention - Mitigate against landslide danger at Mt. Baldy Road and Fergus Falls.		X			GR	5 years	High
LND-2 Debris clearance - Mitigate issues related to debris clearance to ensure efficient functioning of drainage system.				X	GF	5 years	High
LND-3 Thompson Creek - Improvements to Thompson Creek Trail to eliminate debris accumulation and overflow (Mt. Avenue and Pomello).		X			GR	5 years	High

Section 7: Plan Maintenance

The Plan Maintenance section of this document details the formal process that will ensure that the Mitigation Plan remains an active and relevant document. The plan maintenance process includes a schedule for monitoring and evaluating the Plan annually and producing a plan revision every five years. This section describes how the City will integrate public participation throughout the plan maintenance process.

Method and Scheduling of Plan Implementation

The Planning Team that was involved in research and writing of the Plan will also be responsible for implementation. The Committee will be led by a Planning Department Senior Planner. Please refer to **Section 2: Planning Process** of the Plan for a full list of Planning Team members.

	Year 1	Year 2	Year 3	Year 4	Year 5
Monitoring	X	X	X	X	X
Evaluating					X
Updating					X

Monitoring and Implementing the Plan

Plan Adoption

Adoption of the Mitigation Plan by the City's governing body is one of the prime requirements for approval of the plan. Once the plan is completed, the City Council will be responsible for adopting the Mitigation Plan. The governing body has the responsibility and authority to promote sound public policy regarding hazards. The local agency governing body will have the authority to periodically update the plan as it is revised to meet changes in the hazard risks and exposures in the City. The approved Mitigation Plan will be significant in the future growth and development of the City.

The City Council will be responsible for adopting the Mitigation Plan. This governing body has the authority to promote sound public policy regarding hazards. Once the plan has been adopted, the Assistant City Manager will be responsible for submitting it to the State Hazard Mitigation Officer at California Office of Emergency Services (CalOES). CalOES will then submit the plan to the Federal Emergency Management Agency (FEMA) for review and approval. This review will address the requirements set forth in 44 C.F.R. Section 201.6 (Local Mitigation Plans). Upon acceptance by FEMA, City of Claremont will gain eligibility for Hazard Mitigation Grant Program funds.

Convener

The City Council will adopt the Mitigation Plan and the Planning Team will take responsibility for plan maintenance and implementation. The Assistant City Manager will serve as a convener to facilitate the Planning Team meetings, and will assign tasks such as updating and presenting the Plan to the members of the Planning Team. Plan implementation and evaluation will be a shared responsibility among all of the Planning Team members. The Assistant City Manager will have authority to prepare and approve future amendments to the Mitigation Plan.

Planning Team

The Planning Team will be responsible for coordinating implementation of plan action items and undertaking the formal review process. The convener will assign representatives from City departments, divisions, and agencies, including, but not limited to, the current Planning Team.

In order to make the Planning Team as broad and useful as possible, the City Manager may choose to involve other relevant organizations and agencies in hazard mitigation. These additional appointments could include:

- ✓ A representative from the American Red Cross
- ✓ A representative from Los Angeles County Office of Emergency Services

The Planning Team will meet no less than semi-annually. Meeting dates will be scheduled once the final Planning Team has been established. These meetings will provide an opportunity to discuss the progress of the action items and maintain the partnerships that are essential for the sustainability of the mitigation plan.

Implementation through Existing Programs

The City of Claremont addresses statewide planning goals and legislative requirements through its General Plan, its Capital Improvement Plan, and City Building and Safety Codes. The Mitigation Plan provides a series of recommendations - many of which are closely related to the goals and objectives of existing planning programs. The City of Claremont will implement recommended mitigation action items through existing programs and procedures.

The City of Claremont Building and Safety Division is responsible for adhering to the State of California's Building and Safety Codes. In addition, the Planning Team will work with other agencies at the state level to review, develop and ensure Building and Safety Codes are adequate to mitigate or present damage by hazards. This is to ensure that life-safety criteria are met for new construction.

Some of the goals and action items in the Mitigation Plan will be achieved through activities recommended in the CIP. Various City departments develop the CIP and review it on an annual basis. Upon annual review of the CIP, the Planning Team will work with

the City departments to identify areas that the Mitigation Plan action items are consistent with CIP goals and integrate them where appropriate.

Within six months of formal adoption of the Mitigation Plan, the recommendations listed above will be incorporated into the process of existing planning mechanisms at the City level. The meetings of the Planning Team will provide an opportunity for Planning Team members to report back on the progress made on the integration of mitigation planning elements into City planning documents and procedures.

Evaluating and Updating the Plan

Formal Review Process

The Mitigation Plan will be evaluated on an annual basis to determine the effectiveness of programs, and to reflect changes in land development or programs that may affect mitigation priorities. The evaluation process includes a firm schedule and timeline, and identifies the agencies and organizations participating in plan evaluation. The Convener or designee will be responsible for contacting the Planning Team members and organizing the annual meeting. Planning Team members will be responsible for monitoring and evaluating the progress of the mitigation strategies in the Plan.

The Planning Team will review the goals and action items to determine their relevance to changing situations in the City, as well as changes in State or Federal policy, and to ensure they are addressing current and expected conditions. The Planning Team will also review **Section 4: Risk Assessment** portion of the Plan to determine if this information should be updated or modified, given any new available data. The coordinating organizations responsible for the various action items will report on the status of their projects, the success of various implementation processes, difficulties encountered, success of coordination efforts, and which strategies should be revised.

The Convener will assign the duty of updating the Plan to one or more of the Planning Team members. The designated Planning Team members will have three months to make appropriate changes to the Plan before submitting it to the Planning Team members. The Planning Team will also notify all holders of the City plan when changes have been made. Every five years the updated plan will be submitted to the State Hazard Mitigation Officer at the California Emergency Management Agency and the Federal Emergency Management Agency for review. The Assistant City Manager is authorized to approve future updates and amendments to the Mitigation Plan.

Continued Public Involvement

The City of Claremont is dedicated to involving the public directly in the continual review and updates to the Mitigation Plan. Copies of the plan will be catalogued and made available at City Hall and at all City operated public libraries. The existence and location of these copies will be publicized in City newsletters and on the City website. This site will also contain an email address and phone number where people can direct their comments and concerns. A public meeting will also be held after each evaluation or when

deemed necessary by the Planning Team. The meetings will provide the public a forum in which they can express their concerns, opinions, or ideas about the Plan.

The Public Information Officer will be responsible for using City resources to publicize the annual public meetings and maintain public involvement through the public access channel, web page, and newspapers.

Appendix 1: City Council Resolution

RESOLUTION NO. 2021-50

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF CLAREMONT, CALIFORNIA, ADOPTING THE LOCAL HAZARD MITIGATION PLAN (LHMP) UPDATE

WHEREAS, the preservation of life and property is an inherent responsibility of local, state, and federal government; and

WHEREAS, the City of Claremont developed, adopted, and maintains a Local Hazard Mitigation Plan; and

WHEREAS, the goal of a Local Hazard Mitigation Plan is to minimize, reduce, or eliminate loss of life and/or property; and

WHEREAS, this Local Hazard Mitigation Plan represents a comprehensive description of the City's commitment to reducing, preventing, or eliminating potential impacts of disasters caused by natural and man-made hazards; and

WHEREAS, the City of Claremont must adopt an updated Local Hazard Mitigation Plan in accordance with the Disaster Mitigation Act of 2000; and

WHEREAS, the City has undertaken a comprehensive planning effort in developing the Local Hazard Mitigation Plan update by organizing resources, assessing risks, and developing and implementing a mitigation plan and monitoring process; and

WHEREAS, the Local Hazard Mitigation Plan establishes a coordinated effort to support mitigation activities, and identifies measures to combat natural and man-made hazards within our City; and

WHEREAS, the City of Claremont agrees to adopt this Local Hazard Mitigation Plan and urges all officials, employees, public and private organizations, and citizens, individually and collectively, to do their share in furthering the goals and objectives of hazard mitigation within the City of Claremont.

NOW, THEREFORE, BE IT RESOLVED by the Claremont City Council:

SECTION 1. The City Council adopts the updated Local Hazard Mitigation Plan included as an Exhibit to this resolution.

SECTION 2. The City Council directs staff to submit the City's adopted Local Hazard Mitigation to the California Office of Emergency Services (CalOES) and to the Federal Emergency Management Agency (FEMA) for final approval.

SECTION 3. The Mayor shall sign this Resolution and the City Clerk shall attest and certify to the passage and adoption thereof.

PASSED, APPROVED AND ADOPTED this 14th day of September, 2021.

Mayor, City of Claremont

ATTEST:

City Clerk, City of Claremont

APPROVED AS TO FORM:

City Attorney, City of Claremont

STATE OF CALIFORNIA)
COUNTY OF LOS ANGELES)ss.
CITY OF CLAREMONT)

I, Shelley Desautels, City Clerk of the City of Claremont, County of Los Angeles, State of California, hereby certify that the foregoing Resolution No. 2021-50 was regularly adopted by the City Council of said City of Claremont at a regular meeting of said Council held on the 14th day of September, 2021, by the following vote:

AYES:	COUNCILMEMBERS:	CALAYCAY, LEANO, MEDINA, REECE, STARK
NOES:	COUNCILMEMBERS:	NONE
ABSTENSIONS:	COUNCILMEMBERS:	NONE
ABSENT:	COUNCILMEMBERS:	NONE



City Clerk of the City of Claremont

Appendix 2: FEMA Virtual Meetings

VIRTUAL MEETINGS:

Guide to Virtual Hazard Mitigation Planning Meetings

This document details tips, resources, and potential platforms to facilitate and host effective virtual hazard mitigation planning meetings.

In any community, many stakeholders or planning partners can provide valuable input into the mitigation planning process, from local officials to regional planning authorities, local businesses, non-profits, and the public. Engaging these stakeholders throughout the hazard mitigation planning process ensures its success—but how can you do so successfully through virtual engagement?

Communities have different approaches to engaging partners, including meetings, open houses, conference calls, or webinars. As virtual strategies become more common, it's important to consider tips that make these as dynamic and interactive as face-to-face meetings. Collecting and recording feedback, which happens throughout the hazard mitigation planning process, can be done remotely using tips and tools that are readily available. In this guide, you'll find scalable ideas for making your virtual hazard mitigation planning process a success.

There are many ways to meet engagement requirements in the plan process: webinars, conference calls, direct phone calls, email exchanges, and forms or surveys. Webinars and conference calls are the most common alternatives to meeting in-person with jurisdictions. Direct phone calls and emails are useful to share important updates and reminders. Forms and surveys can help you solicit specific feedback on plan components. A multi-faceted approach can also help ensure you have received feedback from as many stakeholders as possible. No matter what method you use, be sure to consider simple ways you can improve the message.

SIMPLE TIPS FOR BETTER VIRTUAL ENGAGEMENT

- **Get Ready** – prepare for your meeting by sending out an agenda in advance and, when you can, allow participants to co-create the agenda to ensure there is more buy-in and interest in participating.
- **Start Strong** – when you start your meeting, consider sharing your video and encouraging participants to do the same to make your discussion feel more connected. Remind participants to mute their phones. Try including an icebreaker, along with introductions, when engaging new groups. Remember, when you are on a video conference, people can hear and see how you are feeling, so project your positive side when delivering information.
- **Respect Time** – start and end your meeting on time. Create a clear structure that follows your agenda and share it early in the presentation. You can even add a progress bar to your slides. Finally, make sure that your virtual meeting does not exceed 2 hours.
- **Mix It Up** – plan for two or three people to speak on a call, so people hear a variety of voices. Don't make your meetings solely a report out; that's what emails or print media are for. Use your meetings to discuss and problem solve.
- **Be Visual** – use smart design principles in your presentation that are not too text-heavy. Where possible, turn text into graphics and images that support your talking points. The presentation should be designed with the experience of the audience in mind.
- **Be Interactive** – call out names to engage your audience and provide time for additional questions or feedback at the end of the call. Explore the capabilities of your meeting platform beforehand to see whether you can use polls, breakout rooms, and whiteboards for real-time collaboration.
- **Plan Ahead** – anticipate technical issues by sending slides to participants in advance and ensuring participants have access to your platform. Provide a separate dial-in option for participants unable to join a webinar. Test all equipment and embedded video and audio by doing a practice run.

VIRTUAL STRATEGIES THROUGHOUT THE PLANNING PROCESS

The Federal Emergency Management Agency (FEMA) requires participation from each community seeking plan approval during plan development. Stakeholders and the public must also be given the opportunity to be involved in the planning process. However, there is no requirement for how this happens. You have the freedom to define a planning process that works for your community, and that includes using digital tools and alternative methods of outreach.

Whether you are organizing a virtual meeting or passing along guidance to another organizer, there are different approaches that you can consider and discuss to ensure you're designing the meeting with the audience in mind.

Initial Stakeholder Engagement

Use social media channels to meet stakeholders where they are and inform them about the upcoming planning process. Messages or short recorded videos shared on social media can help you get the word out about the importance of stakeholder involvement. While virtual engagement is ideal for maintaining face-to-face connections, remember that getting the word out is also effective through more traditional methods like radio, newspaper, mailers, and television. You can use your own networks if they can share information in newsletters or other communication channels. All these methods can help you share why stakeholder input is important, and how people can get involved. Whatever your approach, keep your message simple and direct.

Example: Region II is working with the U.S. Virgin Islands to record a short video message that encourages new stakeholders to participate in the hazard mitigation planning process.

Connect communities with existing webinars for online training or consider hosting one via a webinar platform that works best for you. (A summary of the features available on different webinar platforms and others is available in a table at the end of this guide.) Training provides an opportunity for communities and contractors alike to learn about the mitigation planning process and all the elements that FEMA requires for the plan, as well as how to make sure plans are usable and implementable by the community.

Example: IS-318, Mitigation Planning for Local and Tribal Communities, is a course offered by FEMA's Emergency Management Institute. It is a 12-hour interactive web-based course for plan writers and reviewers.

Kickoff Meetings

Host the project goals and documents on a website and share with stakeholders in advance of the first meeting. During the kickoff, share an engaging presentation that visually depicts the overall timeline, important considerations and requirements, and expectations for input. Punctuate the presentation with poll questions to learn where there are gaps in understanding or interest in specific issues.

Risk Assessment

When developing the Risk Assessment, it is important to understand the issues of greatest concern to participating communities. Think about creating an online poll, either sent by email or integrated into a presentation, to find out which hazards have the most impact on the community, as well as what assets are most vulnerable. Provide a section for additional comments to help get a more detailed local perspective.

Mitigation Strategy Meetings

Some communities hold meetings with FEMA and the State or Territory to review mitigation strategies in detail. Webinar platforms include tools for making these virtual sessions more collaborative. For example, virtual breakout rooms in some online platforms allow smaller groups to meet in a focused discussion. Real-time brainstorming and notetaking are also possible using screensharing or virtual whiteboards.

Individual Community Meetings

Coordinate with each community to decide which virtual engagement method works best for them. Conference calls or video conferences with a small group can be a suitable low-cost alternative for in-person meetings. These types of meetings provide an excellent opportunity for communities to discuss the direct impacts of hazards on their vulnerable populations and assets. They can then address these vulnerabilities by developing mitigation actions while they have access to an expert to guide them through the process. Consider creating simple, easy-to-use forms that can help guide your discussion and help you stay organized when taking notes.

Providing hard copies of forms and surveys is a good way to engage in areas where there are technological limitations. In each packet, include a cover letter that explains what each form is used for and why it's important, along with contact information for questions. Forms can include a risk evaluation on how hazards have either increased or decreased in their community or a request for a description of development trends since the previous plan, status updates for previous mitigation actions, or new mitigation actions.

Draft Hazard Mitigation Plan Feedback Session

As an alternative to holding public open houses, advertise the draft plan in newspapers and across social media platforms. Design a webpage where people can easily review different plan sections and comment on the plan. After distributing the plan, host and record a webinar or a live social media session where you address suggestions received. Use the chat box for participant questions during the session. If using a webinar platform, consider virtual breakout rooms to have more intimate discussions on different plan components.

Example: Some communities in Region X use Facebook Live to review draft HMPs.

Host the recorded session online along with a feedback form so those who missed your session can still review and provide additional comments.

OTHER CONSIDERATIONS

When exploring options for virtual engagement, consider inclusive and low-barrier options for those with limited access to technology. Some technologies do not require installation or are easy to set up. Some platforms are available on mobile phones, which may be preferable if individuals are working from home without a computer. Don't forget traditional ways of sharing and getting information out: radio announcements, mail, utility bills, newsletters, television interviews, local newspapers, door hangers, and windshield surveys.

Virtual engagements must also be accessible: consider whether translation is needed when designing your approach and make use of recording, live captions, and transcription capabilities. While recording is an option, it should be done carefully.

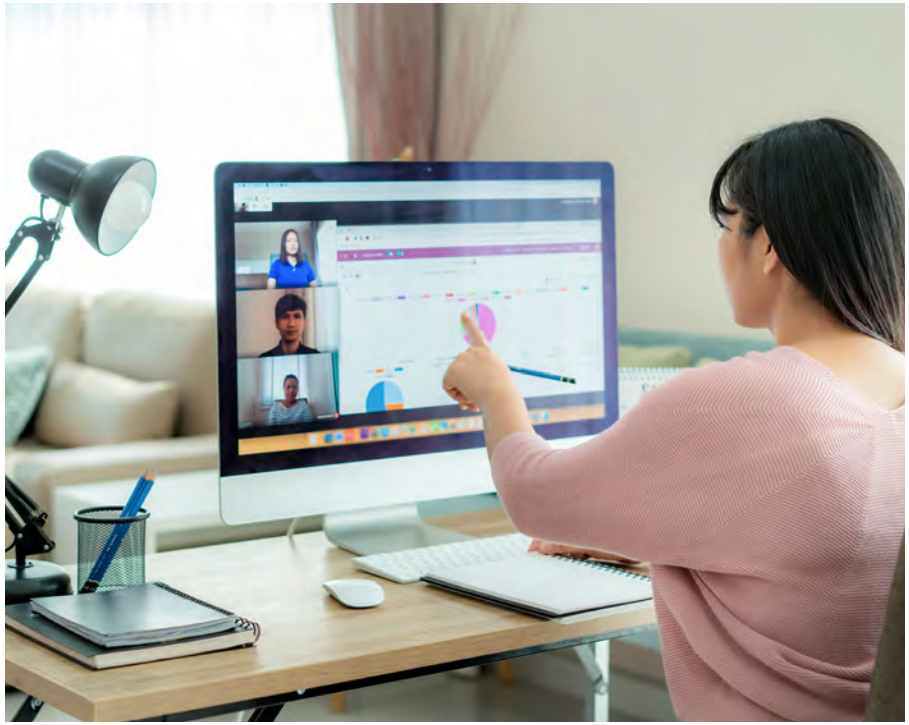
Know your local laws when it comes to open meetings and possible recordings. Laws are determined by the State or Territory, and most require consent before recording. Some virtual meeting platforms have optional recording consent functions built in.

Before selecting a virtual meeting tool, confirm that they meet security standards for everyone involved. You can prevent your meeting from being hijacked by unidentified individuals by making the meeting private, not sharing the meeting link on public online forums, using passwords or waiting rooms on certain meeting platforms, and limiting screensharing to the host only.

When choosing a virtual platform, if FEMA will be hosting the call or participating, make sure that you are using their approved methods, as there are security requirements that need to be vetted beforehand.

ADDITIONAL RESOURCES ON VIRTUAL MEETINGS TIPS AND TOOLS

- What It Takes to Run a Great Virtual Meeting
  Harvard Business Review
- Techniques for Facilitating Virtual Meetings
  Office for Coastal Management, DIGITALCOAST, National Oceanic and Atomospheric Administration (NOAA)



Appendix 3: Public Outreach Documentation

1. City LHMP Update Website
2. Community Meeting #1 Invitations and Materials
3. Community Meeting #2 Invitations and Materials
4. Stakeholder Meeting Materials
5. Community Meeting #3 Invitations and Materials

1. City LHMP Update Website

Want To Know More?

City of Claremont 2015 Natural Hazards Mitigation Plan (PDF)

Hazard Mitigation Planning | FEMA.gov

Police Department
- Proposed Police Facility
- About Us
- Annual Reports
- Community Meeting Videos
- Community Programs
- Crime Prevention
- Department Services
- Department Training and Policies
- Emergency Preparedness
  - Local Hazard Mitigation Plan
  - Local Hazard Mitigation Plan Update
  - Emergency Preparedness Forms
- Employment Opportunities
- Inquiries & Information
- Overnight Parking
- Police Commission Updates
- Police Press Releases
- Police News
- Reporting Neighborhood Concerns
- Vehicle & Traffic Safety
- Volunteer Opportunities
- AB 109 Prop 47 Prop 57 Information
- Contact Us

Government » Departments & Divisions » Police Department » Emergency Preparedness

LOCAL HAZARD MITIGATION PLAN UPDATE

Font Size: Share & Bookmark Feedback Print

Local Hazard Mitigation Plan Update – Community Meeting

Wednesday, July 14, 2020

6:00 PM – 7:00 PM

The community is invited to participate in a meeting with staff and the City's consultant to review the draft Local Hazard Mitigation Plan Update. The meeting will be held via Zoom Webinar on Wednesday, July 14 at 6 PM. The City's Local Hazard Mitigation Plan must be updated every five years to ensure that the City properly assesses the probability of various types of natural and man-made hazards and their impacts to the community in order to maintain eligibility for State and Federal grant funding. With a plan in place, City staff can continue to prioritize projects and the City will continue to be eligible to obtain FEMA pre- and post- disaster grant funding.



Click Here for Meeting Calendar Link

Purpose

The City of Claremont is beginning the process of updating our Local Hazard Mitigation Plan (LHMP). The purpose of the update and the LHMP is to:

- Be compliant with FEMA requirements.
- Identify the City's natural, environmental, and man-made hazards.
- Develop a risk assessment and mitigation plan for those hazards.
- Improve emergency management during an event.
- Identify projects that could potentially reduce risks in the community.

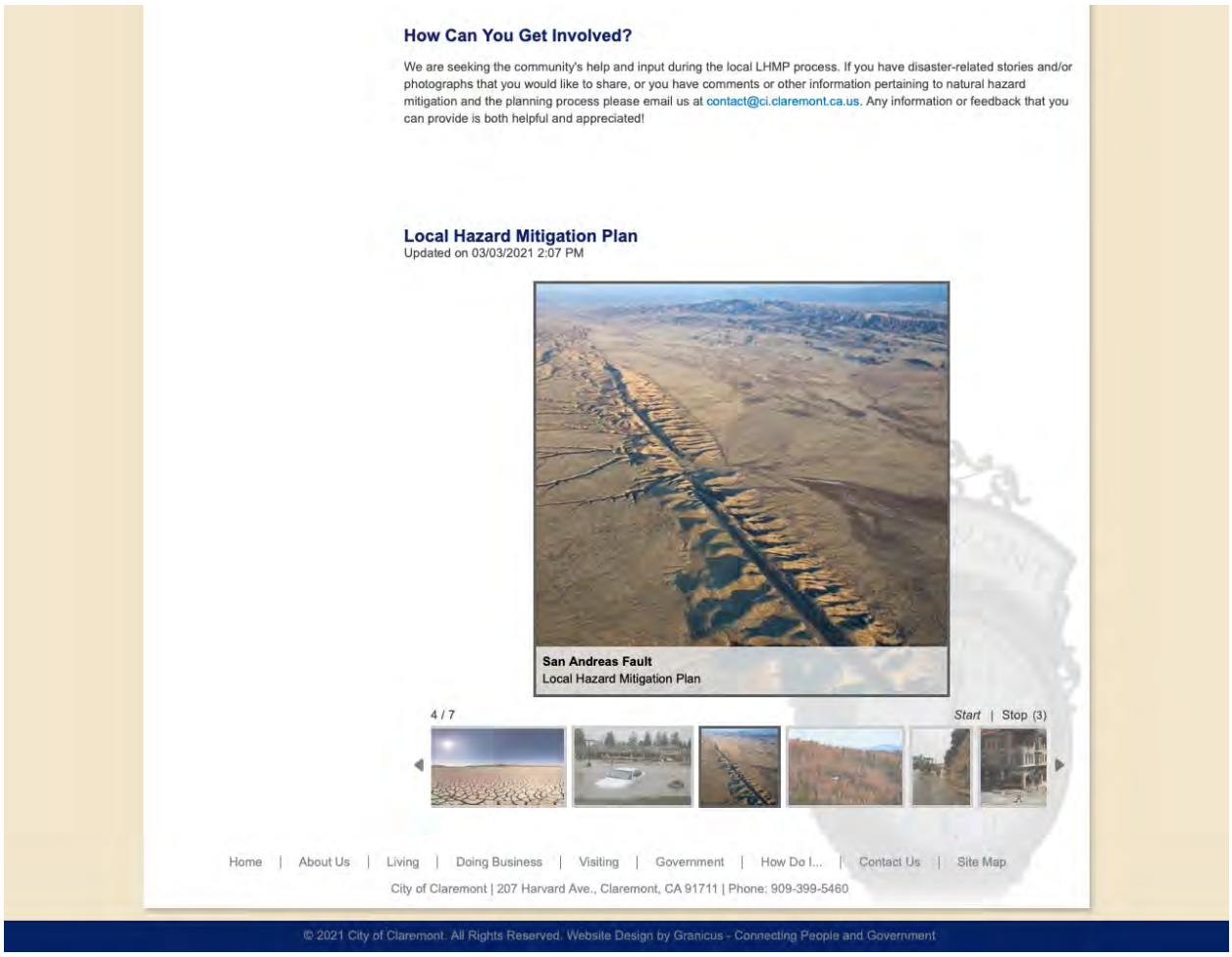
The City's Hazard Mitigation Plan must be updated every five years to ensure that the City properly assesses the probability of various types of natural and man-made hazards and their impacts to the community in order to maintain eligibility for State and Federal Grant funding. With a plan in place, City staff can continue to prioritize projects and the City will continue to be eligible to obtain FEMA Mitigation Grant Funds if a disaster is declared.

How is our LHMP being prepared?

The City has assembled a Hazard Mitigation Planning Committee (HMPC), which includes representatives from public safety officials and City departments, and will guide the overall development of our LHMP. The HMPC is supported by engaged private citizens, key stakeholders, and technical consultants. Together, these participants form the project team responsible for preparing our plan.

What can I do now to be better prepared for disasters?

- Know the hazards that may affect you at your home, work, or school. You can find out more at http://myhazards.caloes.ca.gov
- Assemble an emergency kit for your home. In a disaster, you may have to rely on supplies in your emergency kit for at least three days. Be sure to include supplies for any pets and anyone in your home with special needs. Learn more at Emergency Preparedness | City of Claremont.
- Have a disaster plan for your household, including how people should contact each other if a disaster occurs and where you should meet.
- Learn about your neighbors and how to help them. In a disaster, emergency responders may not be able to reach your neighborhood for a while. Know if your neighbors have any special needs, and be sure to check on them as soon as you can.
- Make sure your homeowner's or renter's insurance covers you from disasters such as earthquakes and floods. If these disasters occur, having good insurance coverage will help you recover easier.
- Volunteer with an emergency response or community service organization that does work on disaster education and preparation.
- Join Claremont's Community Emergency Response Team (CERT), a group of volunteers trained by the Claremont Police Department to assist emergency responders during disasters. Training is free and offered at times throughout the year. Learn more at Community Emergency Response Team (CERT) | City of Claremont.


How Can You Get Involved?
We are seeking the community's help and input during the local LHMP process. If you have disaster-related stories and/or photographs that you would like to share, or you have comments or other information pertaining to natural hazard mitigation and the planning process please email us at contact@ci.claremont.ca.us. Any information or feedback that you can provide is both helpful and appreciated!
Local Hazard Mitigation Plan
Updated on 03/03/2021 2:07 PM
San Andreas Fault
Local Hazard Mitigation Plan
4 / 7
Start | Stop (3)
Home | About Us | Living | Doing Business | Visiting | Government | How Do I... | Contact Us | Site Map
City of Claremont | 207 Harvard Ave., Claremont, CA 91711 | Phone: 909-399-5460
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2. Community Meeting #1

Social Media Invitations



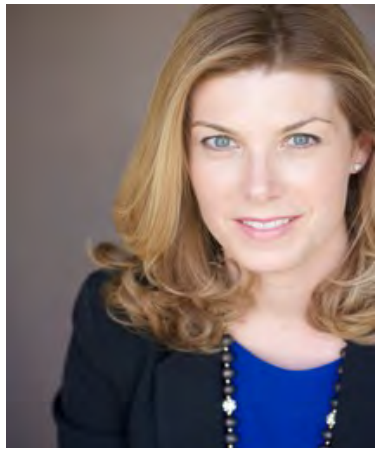


LOCAL HAZARD MITIGATION PLAN





QUINNWILLIAMS



Julie Quinn
Partner



Katherine Williams
Partner



WHAT IS HAZARD MITIGATION?

Hazard mitigation is any action taken to reduce or eliminate the long-term risk to human life and property from hazards

- The goal is to reduce potential losses from future disasters

A **Local Hazard Mitigation Plan** identifies policies and actions that can be implemented over the long term to reduce risk and future losses

WHY ARE WE HERE?

A community must review and revise their existing plan to reflect changes in development, progress in local mitigation efforts, and changes in priorities and resubmit it for approval within five years

The goal of this project is to update Claremont's 2015 LHMP and submit it to FEMA for review

3. Community Meeting #2

Social Media Invitations





CITY OF CLAREMONT

LOCAL HAZARD MITIGATION PLAN

COMMUNITY MEETING

quinn williams

Julie Quinn
Katherine Williams



WHY ARE WE HERE?

Claremont is currently updating its **Local Hazard Mitigation Plan (LHMP)**, which will provide information about the community's vulnerabilities to disasters and what we can do to be more prepared

LHMP PROCESS

Major components of **LHMP** process:

- Determine the natural and human-caused hazards that pose a threat to our community
- Review which buildings and infrastructure are vulnerable to these hazards
- Outline a Hazard Mitigation Strategy with specific recommendations to help reduce the threat from these hazards
- Maintain and update the plan, keeping it current in the face of changing conditions
- Climate Change Adaptation Requirement

LHMP PROCESS

Major components of **LHMP** process:

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RISK ASSESSMENT

Natural Hazards

- Drought
- Earthquake
- Flood
- Landslide
- Wildfire
- Windstorm



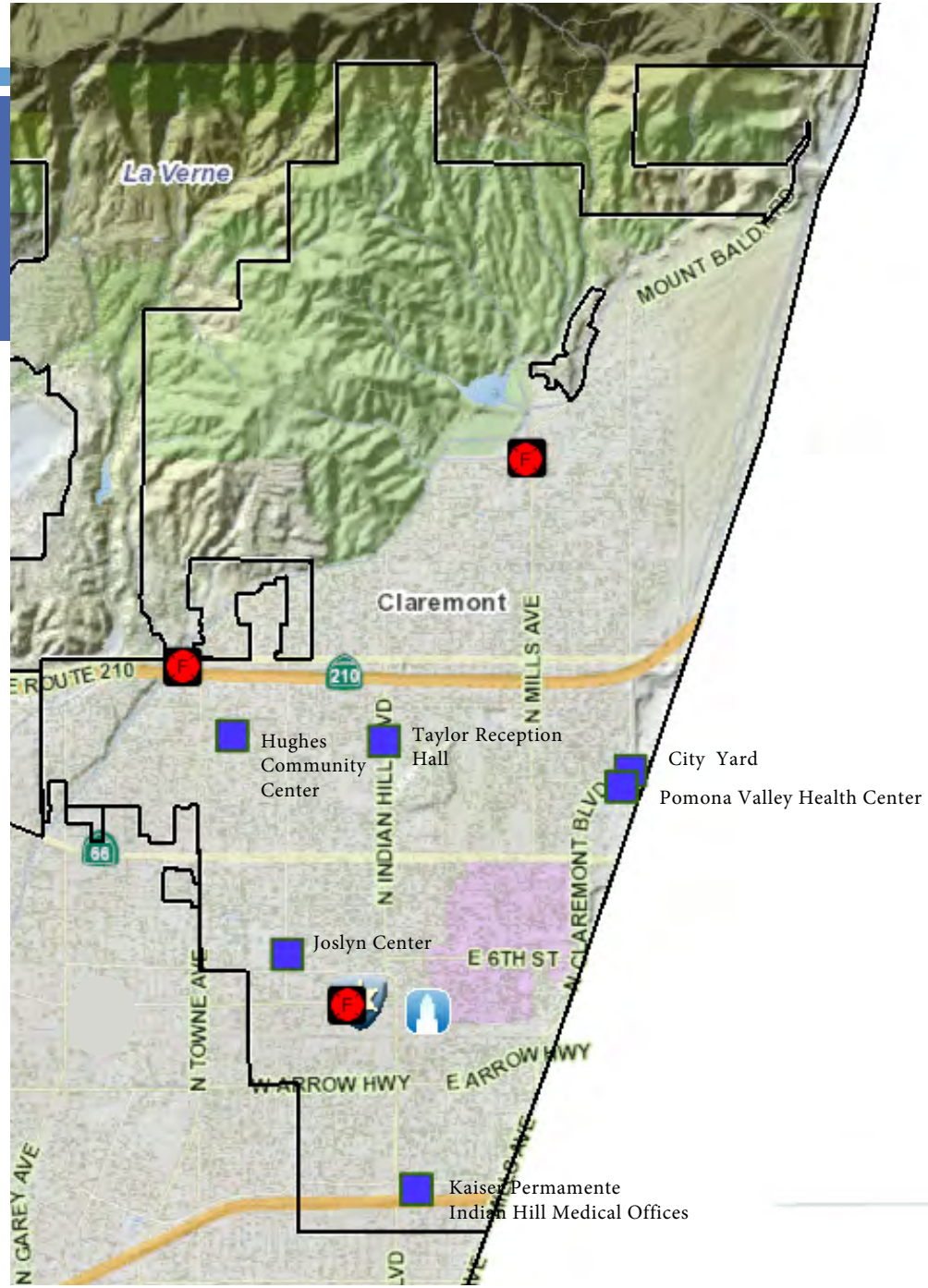
CRITICAL AND ESSENTIAL FACILITIES

Critical Facilities

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- Claremont Police Station
- LA County Fire Stations
- City Yard

Essential Facilities

- Hughes Community Center
- Taylor Reception Hall
- Joslyn Center
- Medical Centers

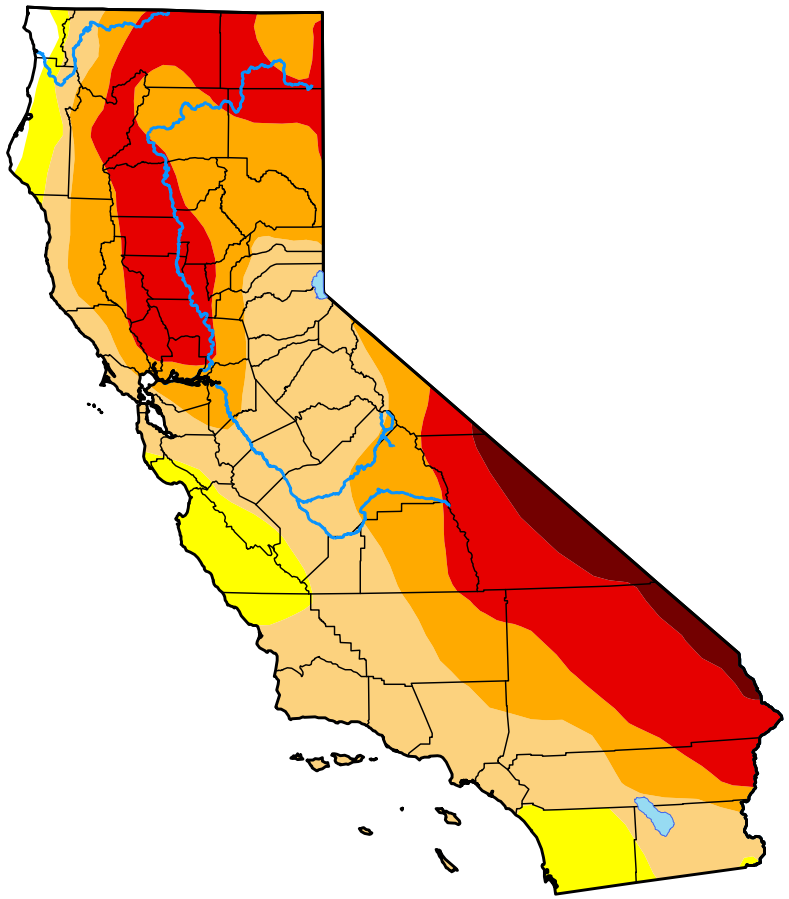


DROUGHT

- City-wide impacts
- Currently Claremont is at level D1 Moderate Drought
- Buildings and critical infrastructure are not directly impacted by drought
- Droughts predicted to get more frequent and severe with climate change

U.S. Drought Monitor

California



March 2, 2021

(Released Thursday, Mar. 4, 2021)

Valid 7 a.m. EST

Intensity:

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

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

Author:

Brian Fuchs
National Drought Mitigation Center

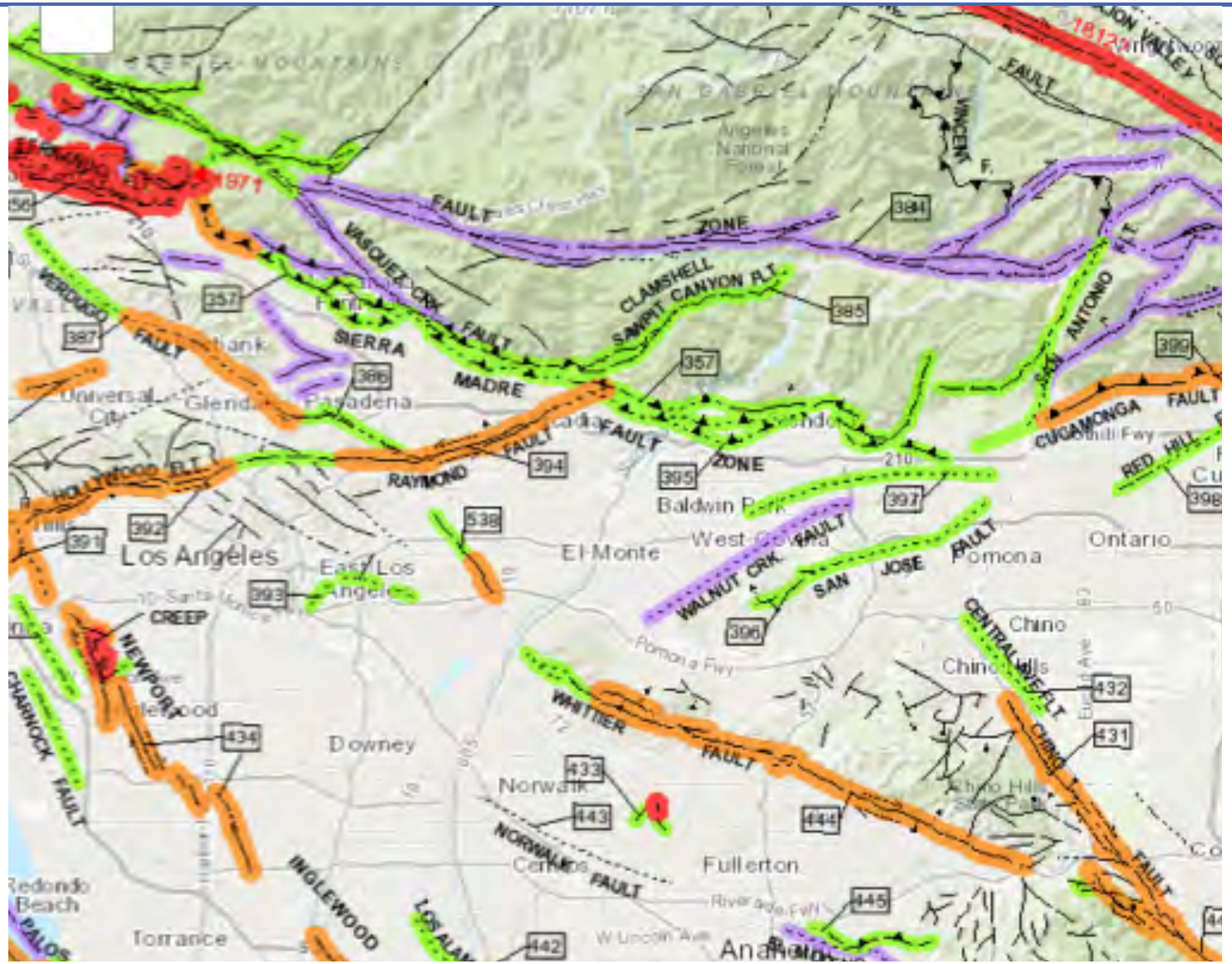
droughtmonitor.unl.edu

EARTHQUAKE



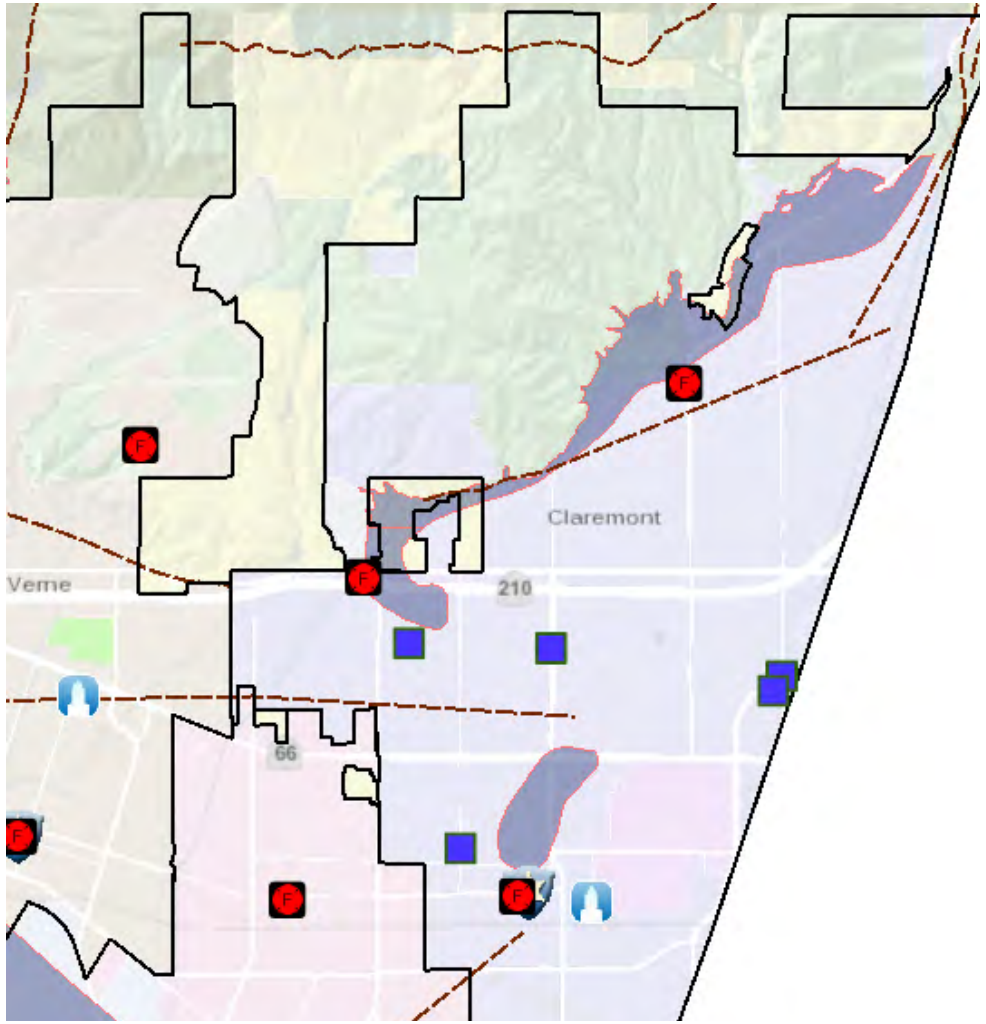
EARTHQUAKE

- Entire region is vulnerable to a significant earthquake
- There are no known climate impacts to earthquake's frequency or severity
- Can also cause landslides and liquefaction



EARTHQUAKE - LIQUEFACTION

- Liquefaction occurs when loose, wet soil loses stability due to sudden shaking
- Major cause of earthquake damage
- Two areas in Claremont are in Liquefaction Zones (Gray Areas)



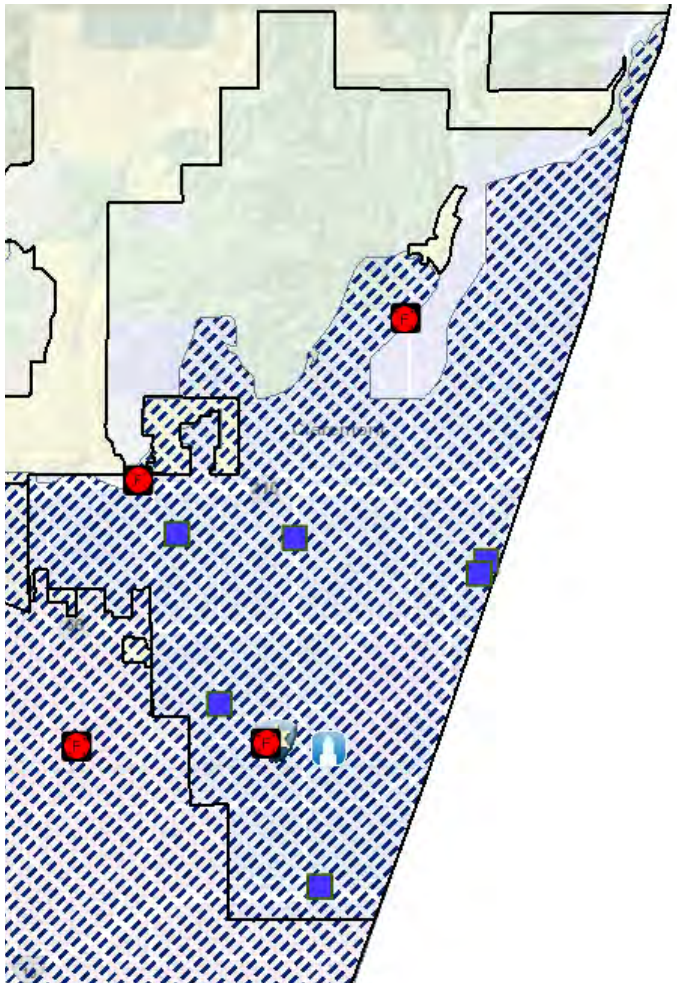
FLOOD



FLOOD - URBAN FLOODING

- Claremont is not in a 100-year floodplain
- Most of Claremont is in a 500-year floodplain
- Climate change predicted to increase intensity of storms and severity of flooding

500 Year Floodplain

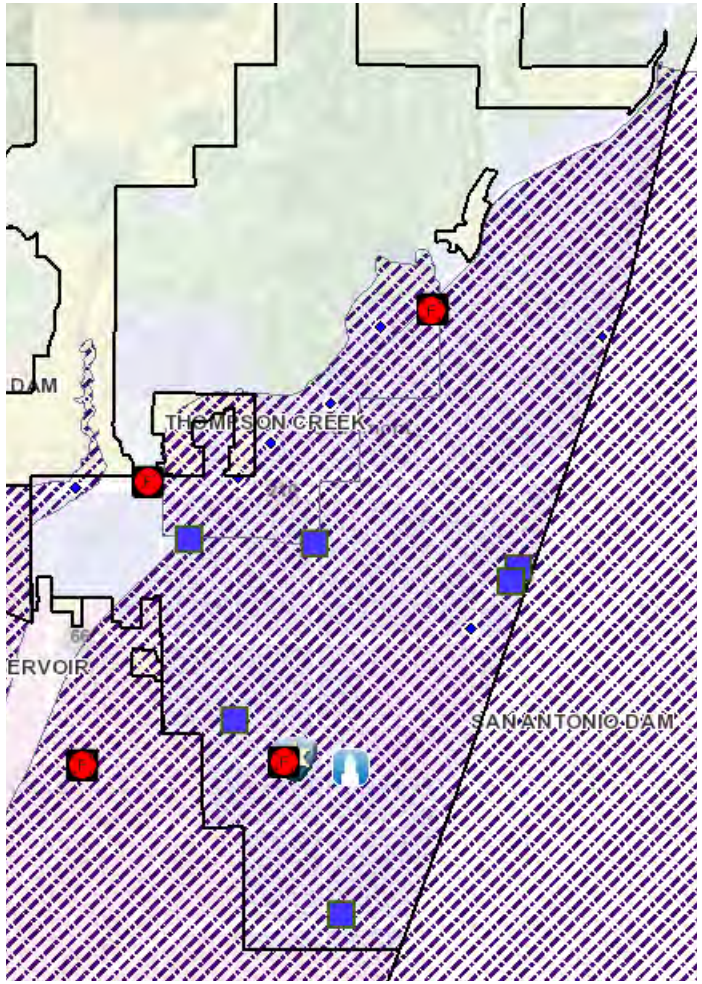


FLOOD - DAM INUNDATION

Claremont is vulnerable to flooding due to dam inundation from three dams:

- San Antonio Dam
- Thompson Creek Dam
- Live Oak Dam

Dam Inundation Areas



LANDSLIDE

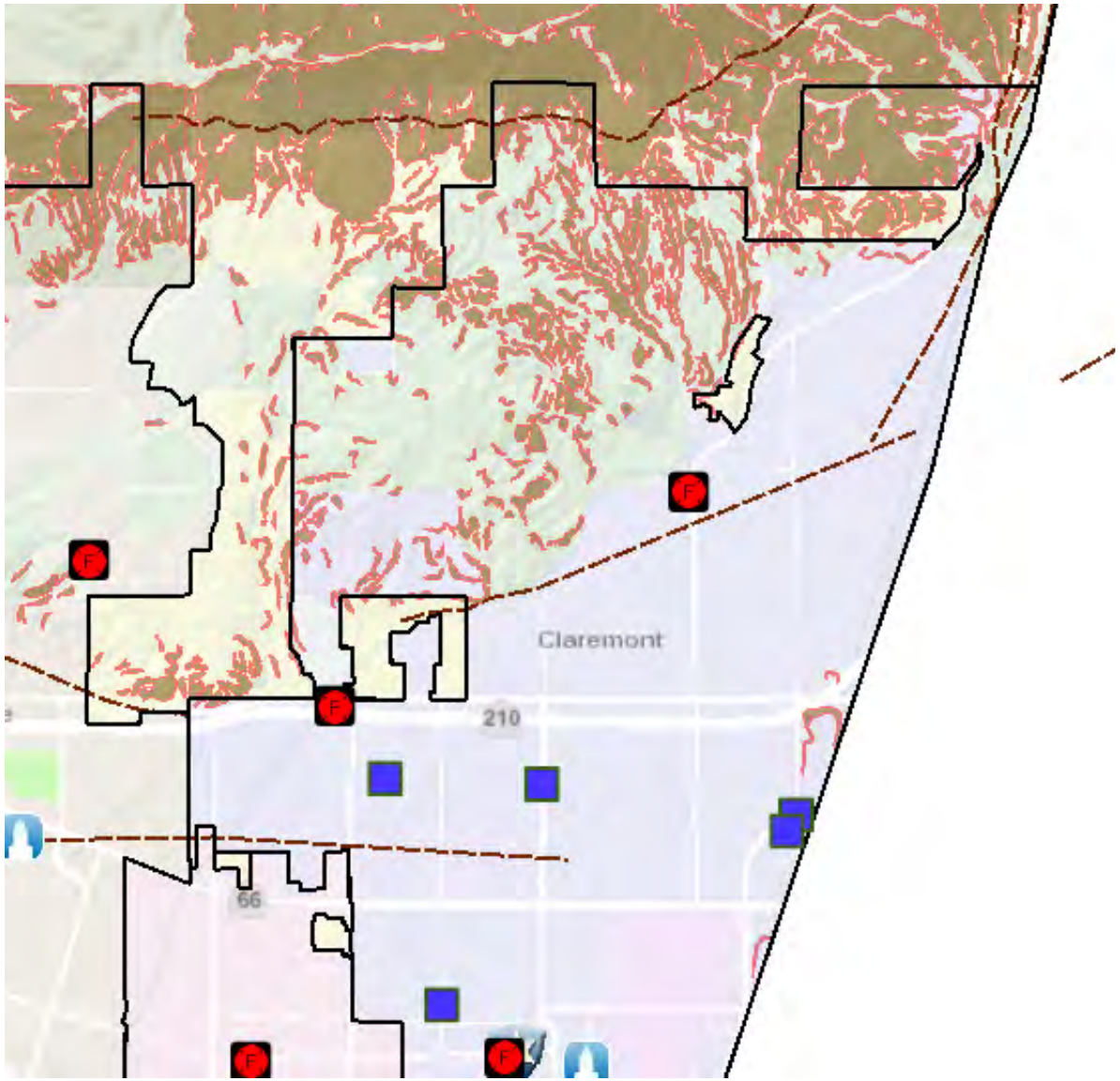


The Montecito city sign along the 101 Freeway. (Katie Falkenberg / Los Angeles Times)

LANDSLIDE

- Common in California - caused by earthquakes, rains
- Can damage roads, buildings and critical infrastructure
- Claremont is primarily at risk in hill and canyon areas
- Areas below hillside and mountains that recently were subjected to wildland fire

Map of Earthquake Induced Landslide Zones



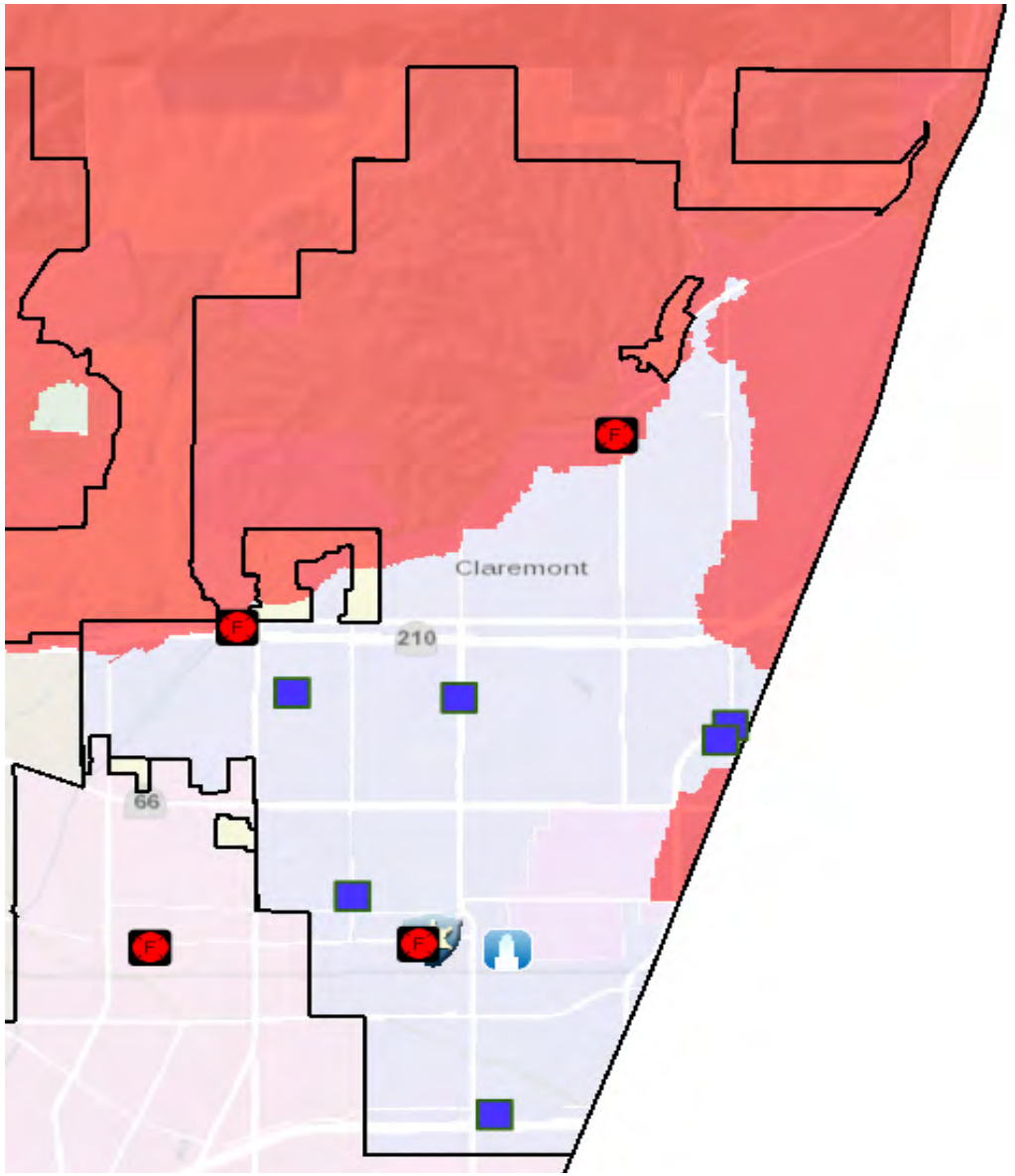
WILDFIRE



WILDFIRE

- California experiences large, destructive wildland fires almost every year
- Foothills and lower mountain areas covered with scrub brush or chaparral fuel fires
- Potential for significant damage to life and property in areas where development is adjacent to densely vegetated areas
- Climate change will likely increase the risk of wildfire

Fire Hazard Severity Zone



WINDSTORM



WINDSTORM

- Entire City is at risk, but particularly canyon areas
- High winds can damage trees, powerlines and utility services
- Fallen trees can damage buildings
- Uncertain if climate change will have an impact on windstorms



HAZARDS RANKED BY RISK

1. Earthquake
2. Wildfire
3. Windstorm
4. Landslide
5. Flood
6. Drought

NEXT STEPS

- Project Team will review and update mitigation strategies
- Updated Draft Plan will be made available for Public Comment
- Project Updates will be provided on City's LHMP webpage on site: https://www.ci.claremont.ca.us

QUESTIONS

If you have additional questions, please contact:

contact@ci.claremont.ca.us

4. Stakeholder Meeting

CITY OF CLAREMONT

LOCAL HAZARD MITIGATION PLAN

STAKEHOLDER MEETING



AGENDA

1. Project Overview
2. Key Dates
3. Hazard Review
4. Mitigation Strategy Overview
5. Stakeholder Updates

LHMP PROCESS

1. Risk Assessment
2. Mitigation Strategy
3. Stakeholder Engagement
4. Community Engagement
5. Updated Mitigation Strategy
6. Public Review of Plan
7. Final Plan
8. Submit for Approval

ESTIMATED DATES

May 12: Stakeholder Outreach Meeting

June 30: Draft Plan Update

Community Meeting and 2-week comment period

August 30: Submit to CalOES

LHMP PROCESS

Major components of **LHMP** process:

- Determine the natural and human-caused hazards that pose a threat to our community
- Review which buildings and infrastructure are vulnerable to these hazards
- Outline a Hazard Mitigation Strategy with specific recommendations to help reduce the threat from these hazards
- Maintain and update the plan, keeping it current in the face of changing conditions
- Climate Change Adaptation Requirement

CLIMATE IMPACT REQUIREMENT

New requirement:

- California Government Code § 65302(G)(4) requires local jurisdictions to review and update their safety elements upon the next revision of an LHMP on or after January 1, 2017, or if a local jurisdiction has not adopted an LHMP, beginning on or before January 1, 2022, as necessary to address climate adaptation and resiliency strategies.

HAZARDS

1. Earthquake
2. Flood
3. Landslide
4. Wildfire
5. Windstorm
6. Drought

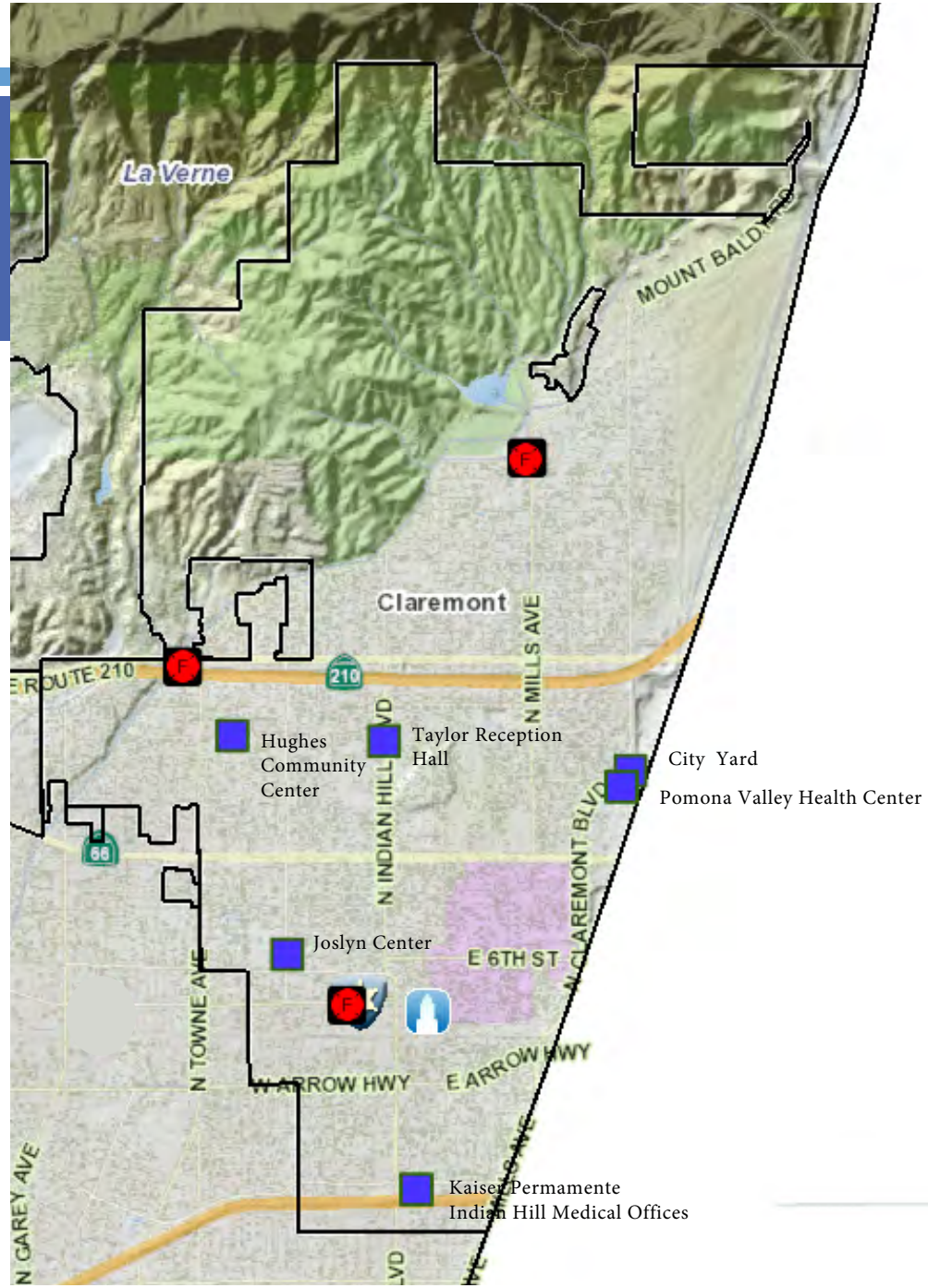
CRITICAL AND ESSENTIAL FACILITIES

Critical Facilities

- City Hall
- Claremont Police Station
- LA County Fire Stations
- City Yard

Essential Facilities

- Hughes Community Center
- Joslyn Center
- Medical Centers
- Taylor Reception Hall



RISK ASSESSMENT




Earthquake


Wildfire


Windstorm


Landslide
Montecito
POP 10,000
ELEV 193


Flood
STOP


Drought

MITIGATION STRATEGY

A *mitigation strategy* provides the jurisdiction's blueprint for reducing the potential losses identified in the risk assessment, based on existing authorities, policies, programs, and resources

TYPES OF MITIGATION ACTIONS

- Local Plans and Regulations
- Structure and Infrastructure Projects
- Natural Systems Protection
- Education and Awareness

MITIGATION PLAN ITEMS

Multi-Hazard

- Emergency Training
- Community Outreach
- Alerts and Warning
- Zoning and General Plan
- Back Up Power
- Building and Fire Codes
- Capital Improvement Program
- Development Review

Highlight Resiliency Project: Solar Power

The City is conducting an energy audit to explore installing solar with battery backup at several City facilities including Hughes Center, Police Department, City Yard, and Taylor Hall.

This is part of the Trane Energy Improvement Project.

Timeframe: End of 2022

Funding: This will be a cashflow neutral project funded by repayable loans that will be offset and paid for by energy savings.



MITIGATION PLAN ITEMS

Fire

- Fire Mitigation and Community Preparedness Outreach
- Fire Extinguisher Training
- General Water Infrastructure Improvements
- Tree Removal
- Brush Clearance

Earthquake

- Hillside Ordinance
- Grading Plans

Severe Weather

- Street Tree Maintenance
- Underground Utilities
- Retrofit A/C Units

Flood

- Drainage System Maintenance
- Flood Insurance
- Drainage Facilities

Landslide

- Debris Clearance

STAKEHOLDER INPUT

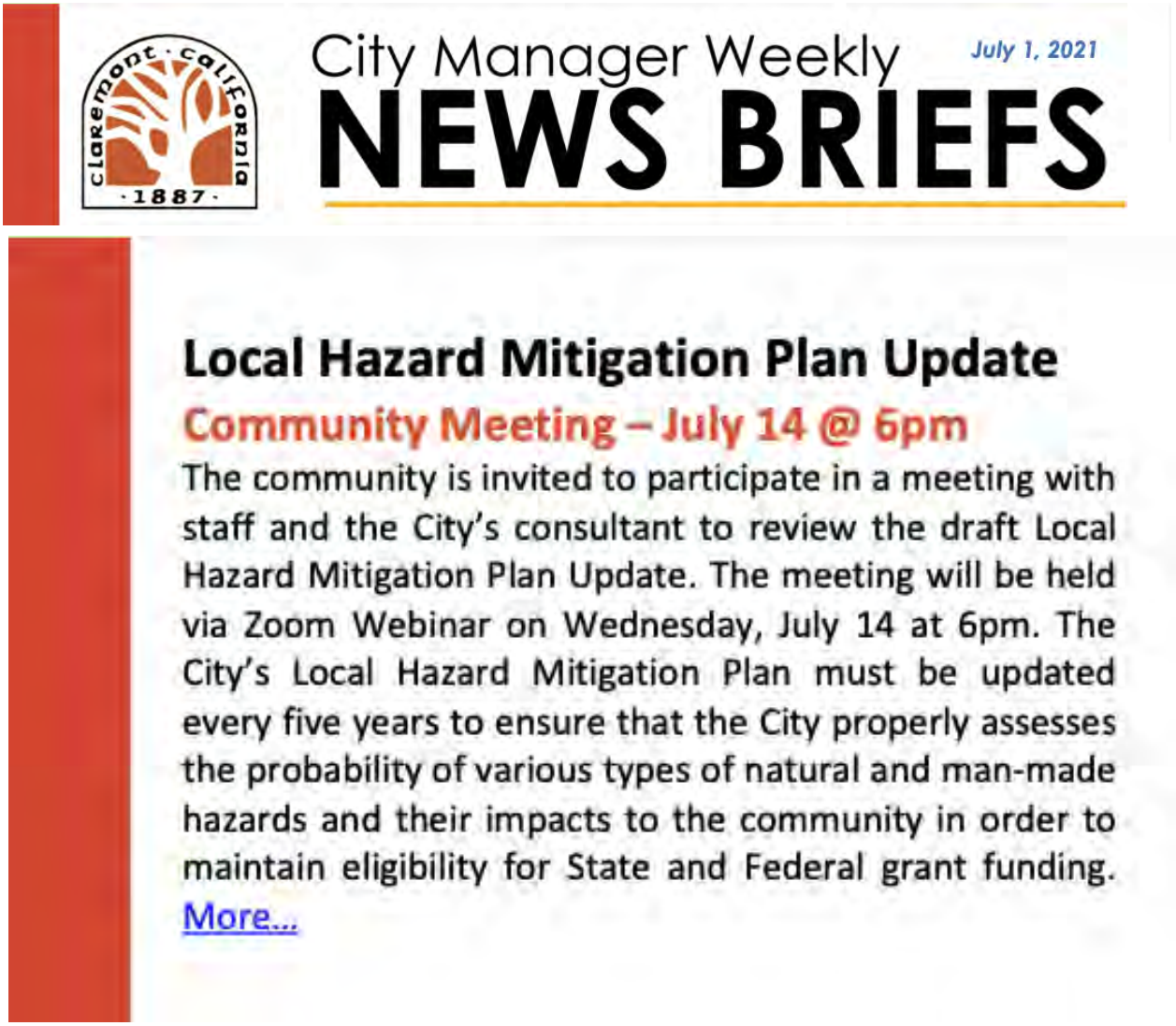
Stakeholder updates?

NEXT STEPS

- Project Team will review and update mitigation strategies
- Updated Draft Plan will be made available for Public Comment
- Project Updates will be provided to the LHMP webpage on the City's website: https://www.ci.claremont.ca.us

4. Stakeholder Meeting

5. Community Meeting #3



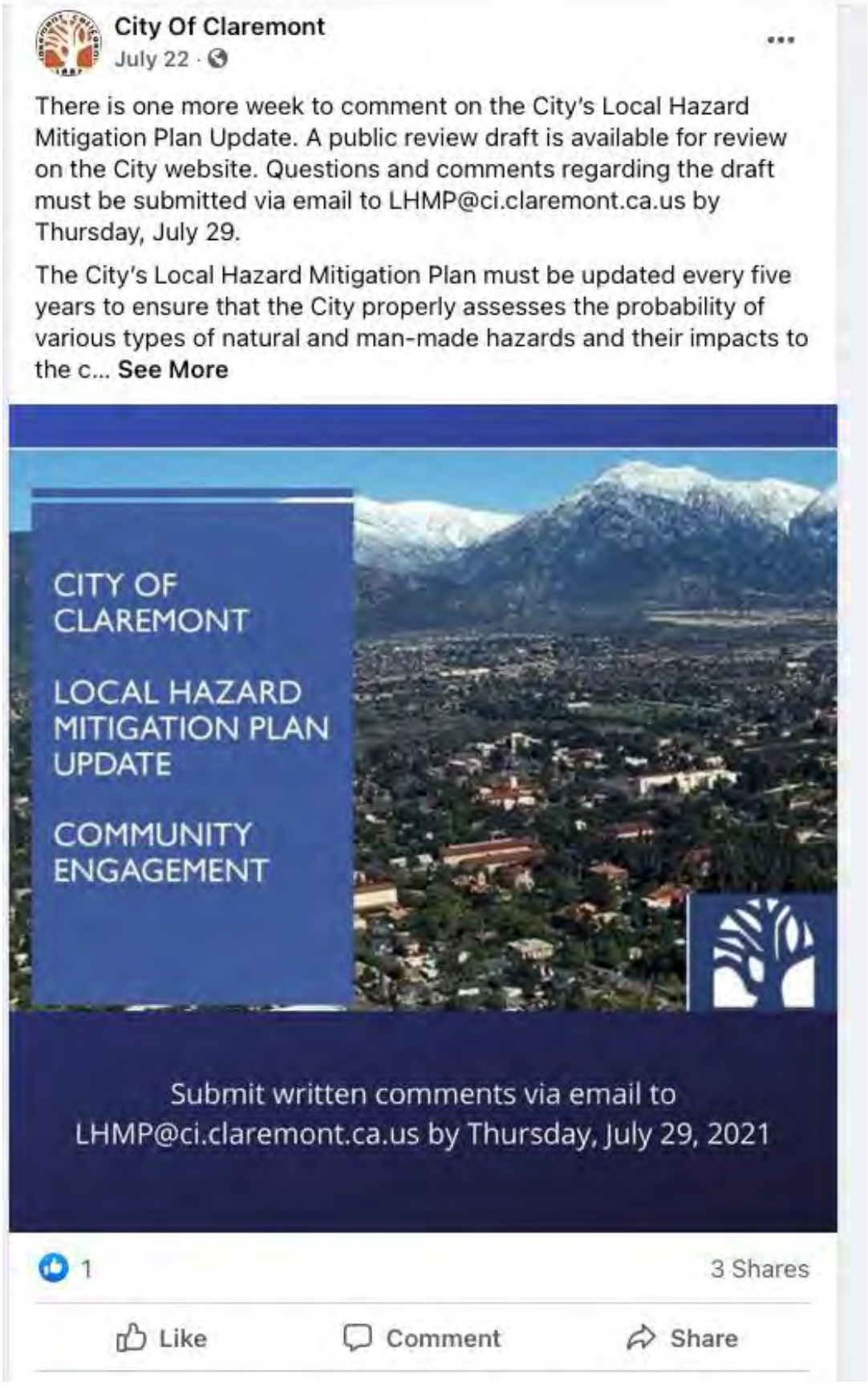
City Manager Weekly July 1, 2021

NEWS BRIEFS

Local Hazard Mitigation Plan Update

Community Meeting – July 14 @ 6pm

The community is invited to participate in a meeting with staff and the City's consultant to review the draft Local Hazard Mitigation Plan Update. The meeting will be held via Zoom Webinar on Wednesday, July 14 at 6pm. The City's Local Hazard Mitigation Plan must be updated every five years to ensure that the City properly assesses the probability of various types of natural and man-made hazards and their impacts to the community in order to maintain eligibility for State and Federal grant funding. More...



City of Claremont
Local Hazard Mitigation Plan



CITY OF CLAREMONT

LOCAL HAZARD MITIGATION PLAN UPDATE

COMMUNITY ENGAGEMENT

quinn williams

AGENDA

1. Welcome
2. Project Overview
3. Hazard Review
4. Mitigation Strategy Overview
5. Questions

PLANNING TEAM

City of Claremont:

- Karlan Bennett, Claremont Police Department
- Jamie Earl, City Manager's Office
- Melissa Vollaro, Human Services Department
- Robert Ewing, Police Department
- Kristin Mikula, Community Services Department
- Vince Ramos, Community Development

Consultant Services:

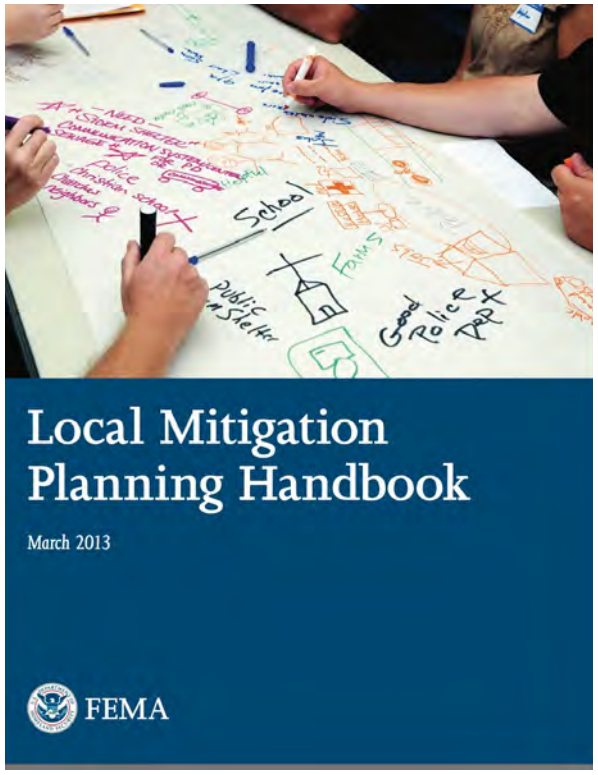
- Julie Quinn, QuinnWilliams
- Katherine Williams, QuinnWilliams

WHAT IS A HAZARD MITIGATION PLAN?

Mitigation plans help states, tribes and local jurisdictions understand their risk from hazards and reduce losses based on those risks.

THE DISASTER MITIGATION ACT OF 2000 (DMA 2000)

- Before 2000, under the Stafford Act, emphasis was on post-disaster mitigation
- DMA 2000 shifted emphasis to mitigation before, rather than after, disasters
- Requires LHMPs to be prepared before local government can receive federal mitigation project grants
- LHMPs are on a 5-year update cycle



LHMP UPDATE PROCESS

1. Risk Assessment
2. Mitigation Strategy
3. Stakeholder Engagement
4. Community Engagement
5. Updated Mitigation Strategy
6. Public Review of Plan
7. Final Plan
8. Submit for Approval

PROJECT SCHEDULE

15 July
Begin Two-week Public Review Period

30 August
Final Draft to Planning Committee

30 September
CalOES Review (up to 45 days)

Consultant Review of Public Comment
1 August

City Council Plan Adoption
14 September

MAJOR COMPONENTS OF LHMP PROCESS

- Determine the natural and human-caused hazards that pose a threat to the community
- Review which buildings and infrastructure are vulnerable to these hazards
- Outline a Hazard Mitigation Strategy with specific recommendations to help reduce the threat from these hazards
- Maintain and update the plan, keeping it current in the face of changing conditions
- Climate Change Adaptation Requirement

CLIMATE IMPACT REQUIREMENT

Recent California requirement:

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Earthquake


Wildfire


Windstorm


Montecito
Landslide


STOP
Flood

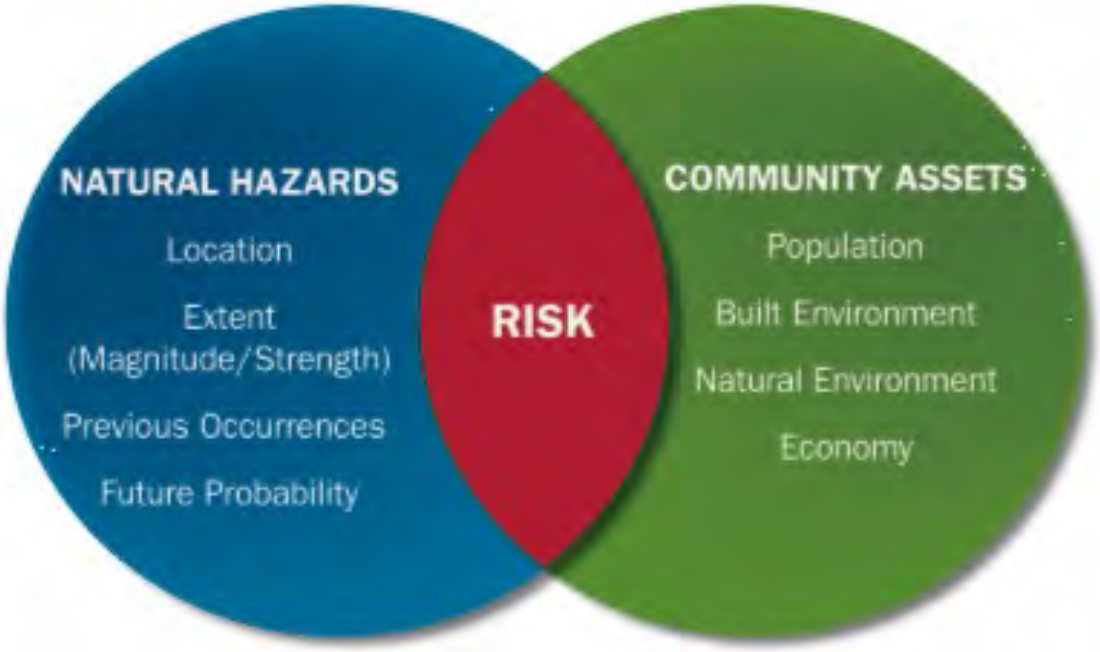

Drought


Cyber
Disruption

RISK ASSESSMENT: SURVEY RESULTS

Hazard	Probability	Weighted 45% (x.45)	Magnitude Severity	Weighted 30% (x.3)	Warning Time	Weighted 15% (x.15)	Duration	Weighted 10% (x.1)	CPRI Ranking
Drought	2.7	1.2	1.3	0.4	1.0	0.2	4.0	0.4	**2.15**
Climate Change	2.8	1.3	1.5	0.5	1.0	0.2	3.3	0.3	**2.21**
Flood	2.2	1.0	2.3	0.7	3.5	0.5	3.5	0.4	**2.55**
Epidemic/ Pandemic	2.8	1.3	2.5	0.8	1.0	0.2	4.0	0.4	**2.58**
Landslide	2.5	1.1	2.0	0.6	3.8	0.6	3.3	0.3	**2.63**
Cyber Disruption	2.7	1.2	2.2	0.7	3.3	0.5	3.3	0.3	**2.68**
Civil Unrest	2.8	1.3	2.2	0.7	3.7	0.6	3.2	0.3	**2.79**
Windstorm	3.5	1.6	2.3	0.7	3.1	0.5	3.2	0.3	**3.05**
Wildfire	3.3	1.5	3.3	1.0	3.9	0.6	3.8	0.4	**3.47**
Earthquake	3.3	1.5	3.8	1.2	4.0	0.6	3.8	0.4	**3.63**

RISK ASSESSMENT



Note: Modified from U.S. Geological Survey and Oregon Partnership for Disaster Resilience Models.

Source: FEMA LHMP Guide 2013

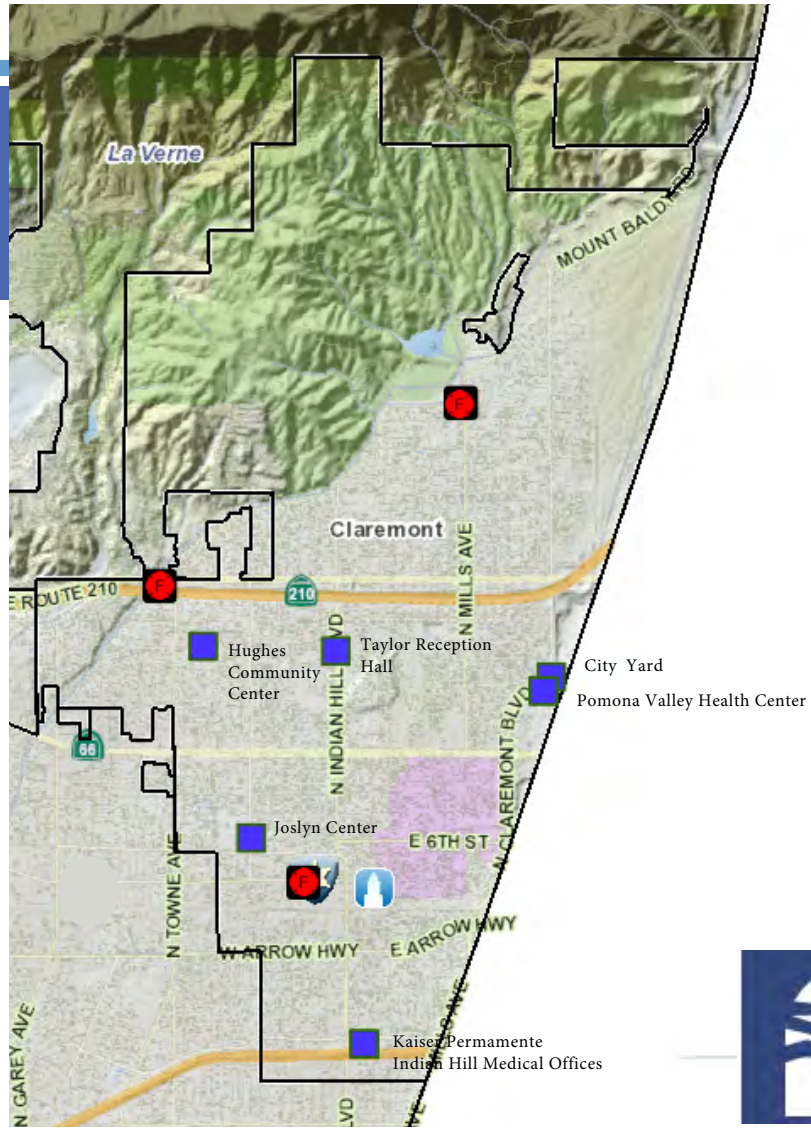
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- Claremont Police Station
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- Taylor Reception Hall



MITIGATION STRATEGY

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CLAREMONT MITIGATION GOALS

Protect	Protect Life and Property
Enhance	Enhance Public Awareness
Preserve	Preserve Natural Systems
Encourage	Encourage Partnerships and Implementation
Strengthen	Strengthen Emergency Services

TYPES OF MITIGATION ACTIONS



LOCAL PLANS AND REGULATIONS



STRUCTURE AND INFRASTRUCTURE PROJECTS



NATURAL SYSTEMS PROTECTION



EDUCATION AND AWARENESS

TYPES OF MITIGATION PLAN PROJECTS



MITIGATION PROGRESS REPORT

Planning Team reviewed 29 mitigation projects from 2015 LHMP:

- Completed: 3
- Ongoing: 18
- Deferred: 5
- Removed: 3

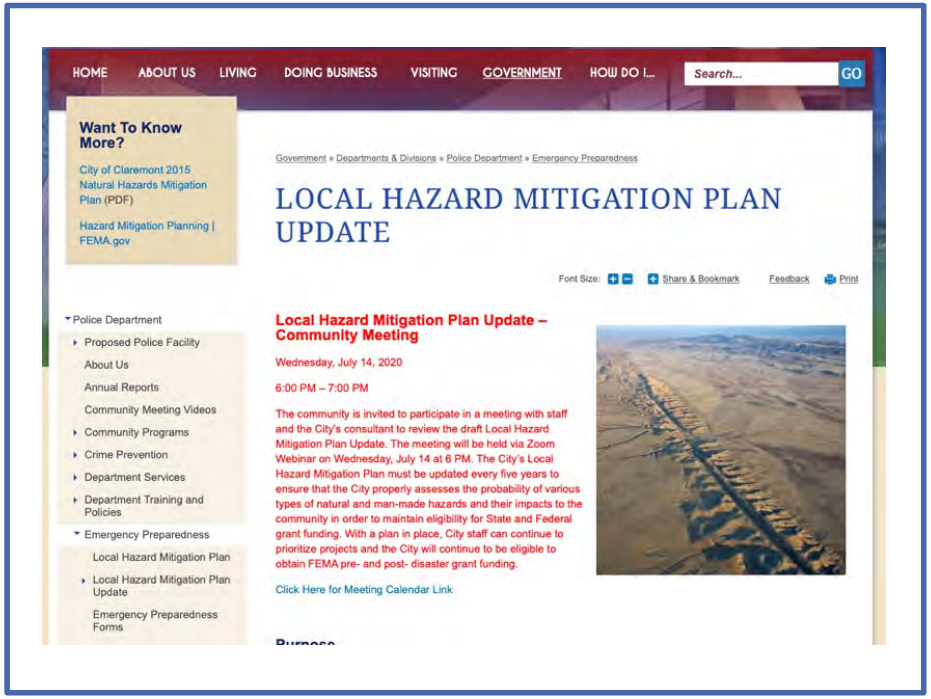
MITIGATION PLAN EXAMPLE PROJECT

Multi-Hazard Resiliency Project: Solar Power

- The City is conducting an energy audit to explore installing solar with battery backup at several City facilities including Hughes Center, City Yard, and Taylor Hall
- This is part of the Trane Energy Improvement Project
- Timeframe: End of 2022, pending funding
- Funding: This would be a cashflow neutral project funded by repayable loans that will be offset and paid for by energy savings



REVIEWING THE PLAN



- Go to the City's website: https://www.ci.claremont.ca.us
- In the "Search bar" type **LHMP Update**
- The LHMP Plan Update document will be posted on Thursday morning, 7/15
- Comments are due by 7/29
- Email: LHMP@ci.claremont.ca.us

QUESTIONS?

LHMP Update webpage on City's website:

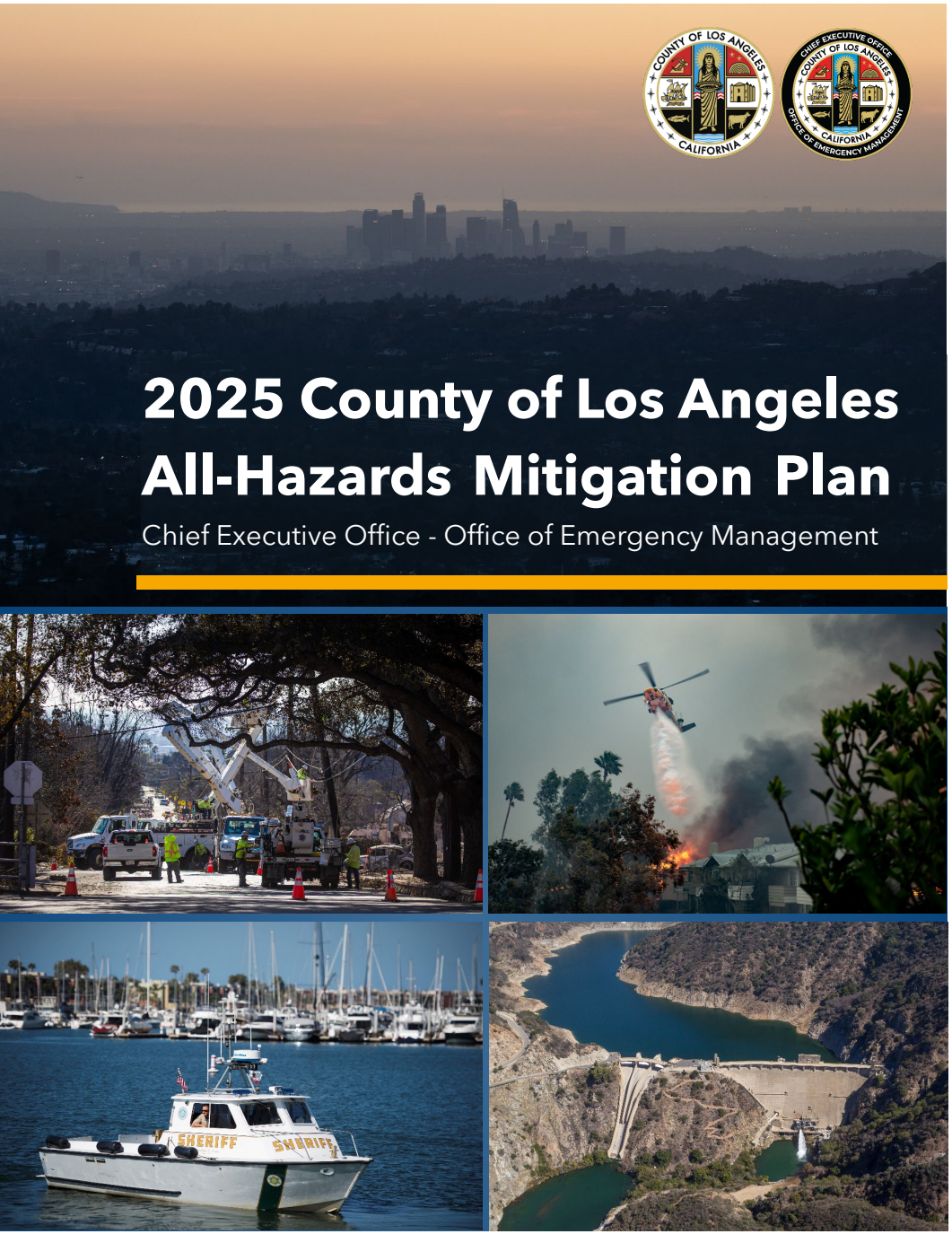
https://www.ci.claremont.ca.us

Comments due by 7/29

LHMP@ci.claremont.ca.us

APPENDIX C

COUNTY OF LOS ANGELES' ALL-HAZARDS MITIGATION PLAN



Acknowledgement

The Los Angeles County Board of Supervisors gratefully acknowledges the following agencies/jurisdictions who contributed to the development of this plan.

County Departments

Aging and Disabilities
Chief Executive Office
Chief Sustainability Office
Beaches and Harbors
Economic Opportunity
Health Services
Human Resources
Parks and Recreation
Public Health
Public Social Services
Public Works
Regional Planning
Fire (LACoFD)
Internal Services
Sheriff (LASD)

Disaster Management Area Coordinators

State of California

California Governor's Office of Emergency Services (Cal OES)
California State Council on Developmental Disabilities (SCCD)

External Partners

Access Services
Alzheimer's Association
Catholic Charities
City of Beverly Hills
City of Long Beach
Disability Community Resource Center
Eastern Los Angeles Regional Center
Emergency Network Los Angeles
Habitat for Humanity
Harbor Regional Center
Lanterman Regional Center
Los Angeles County Office of Education
Los Angeles County Sanitation Districts
Los Angeles County Metropolitan Transportation Authority
Los Angeles Regional Food Bank
Neighborhood Legal Services of Los Angeles County
Puente Hills Habitat Preservation Authority
South Central Los Angeles Regional Center
Westside Regional Center

Cover Photo Credits: Los Angeles County Chief Executive Office, Countywide Communications Branch; Los Angeles County Department of Public Works

Letter of Promulgation

To: Residents, Officials, and Employees of Los Angeles County

Preservation of life and property is an inherent responsibility of local, state, and federal government. The County of Los Angeles produced this updated 2025 All-Hazard Mitigation Plan (AHMP) to delineate mitigation responsibilities of County departments and describe mitigation support to communities.

While no plan can guarantee prevention of death and destruction, a well-developed AHMP can guide mitigation efforts aimed at decreasing the amount of loss experienced after an emergency. The Federal Disaster Mitigation Act of 2000 (DMA 2000) requires that local jurisdictions have an updated mitigation plan in order to be eligible for mitigation project activities. The intent of the 2025 AHMP also ensures that mitigation actions are based on sound planning processes that account for the risks and capabilities of communities within Los Angeles County of Mitigation plans are strategic and policy level documents, forming the foundation of a community's long-term strategy to reduce disaster losses.

The AHMP should be reviewed on an annual basis and approved every five years. The AHMP conforms to the requirements set forth the by the Federal Emergency Management Agency (FEMA) and the California Governor's Office of Emergency Services (Cal OES). The Los Angeles County Board of Supervisors gives its full support to the 2025 All-Hazards Mitigation Plan and urges all residents, officials, and employees to collectively share in our commitment to hazard mitigation.

This letter promulgates the 2025 All-Hazards Mitigation Plan which becomes effective upon approval by the Los Angeles County Board of Supervisors.

Kathryn Barger

Kathryn Barger, Chair
Los Angeles County Board of Supervisors

9/9/25
Date

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1 Introduction, Purpose, and Scope

1.1 Purpose

The 2025 All-Hazard Mitigation Plan (AHMP) was developed in collaboration with a wide range of stakeholders representing County Departments and other external stakeholders from cities, local utilities, non-governmental organizations, and state agencies. The purpose of this AHMP is to form the strategic-level foundation for hazard mitigation efforts undertaken by the County of Los Angeles. The 2025 AHMP is an update to the 2020 version of the plan and seeks to maintain the County's continuing commitment to hazard mitigation as a critical step in reducing hazard risks, making communities safer, and building countywide resilience.

1.2 Scope

Hazard mitigation is defined in the Code of Federal Regulations (CFR) as "any sustained action taken to reduce or eliminate the long-term risk to human life and property from hazards." This AHMP identifies and profiles hazards, analyzes the people and critical infrastructure at risk, and provides a series of mitigation strategies aimed at reducing hazard risk. The plan also describes actions to integrate vulnerable communities including people with Access and Functional Needs (AFN) into hazard mitigation planning and other efforts. The AHMP is intended to function as a strategic plan for hazard mitigation and, while not an emergency plan, complements the Los Angeles County Operational Area Emergency Operations Plan. This plan contains mitigation strategies for County-owned facilities or other areas under the jurisdiction of the County of Los Angeles. Hazard mitigation strategies for incorporated cities within Los Angeles County may be found in that city's hazard mitigation plan.

1.3 Legal Authority and Requirements

Historically local hazard mitigation planning has been driven by federal law. The Disaster Mitigation Act (DMA) of 2000 amended the Robert T. Stafford Disaster Relief and Emergency Assistance Act of 1988 with new requirements for hazard mitigation. The DMA of 2000 emphasized the need for state, tribal, and local entities to closely coordinate on hazard mitigation efforts and formed the legal basis for the Federal Emergency Management Agency's (FEMA) current mitigation plan requirements in order to utilize Hazard Mitigation Assistance grant programs. This plan was prepared

pursuant to the requirements set forth in the DMA of 2000 and other FEMA hazard mitigation policy guidance.

1.4 Plan Organization

The AHMP is organized into nine (9) sections, excluding the Appendices, including:

1. **Introduction:** Discusses the purpose, scope, and legal authority of the plan.
2. **Planning Process:** Describes the planning process that was undertaken by the Hazard Mitigation Planning Committee to create this updated 2025 AHMP.
3. **Community Profile:** Overviews the unique geographic, climatic, environmental, and socioeconomic factors that make up Los Angeles County and their implications for hazard mitigation planning.
4. **Climate Change:** Outlines the impacts of climate change in Los Angeles County and potential mitigation and adaptation measures.
5. **Integrating AFN into Hazard Mitigation:** Discusses strategies for integrating people with Access and Functional Needs (AFN) into prevention and hazard mitigation efforts.
6. **Hazard Identification and Risk Assessment:** Identifies and profiles nine (9) natural and four (4) human-caused hazards that may impact Los Angeles County including: wildfire, earthquake, extreme heat, drought, flooding, dam failure, land movement, tsunami, severe wind and tornado, mass violence, cybersecurity incidents, transportation incidents, and public health emergencies.
7. **Mitigation Strategy:** Delineates the overall strategy for the County's hazard mitigation efforts including goals and objectives, existing mitigation capabilities, and an analysis of mitigation actions.
8. **Plan Maintenance:** Outlines how the plan will be maintained annually ahead of the next full plan update in five years.
9. **Plan Adoption:** Discusses updates to the plan and implementation following plan adoption.

Following these sections, there are an additional six (6) appendices with supporting materials such as hazard maps, meeting minutes from planning meetings, and information about the public engagement efforts during the planning process.

2 Planning Process

2.1 Overview of the Planning Process

The 2025 Los Angeles County All-Hazard Mitigation Plan (AHMP) update builds upon the robust all-hazard planning framework established by the 2020 All-Hazards Mitigation Plan, while incorporating new methodologies, stakeholder engagement, and compliance requirements. The planning process for this update emphasized inclusivity, transparency, and the integration of emerging climate adaptation considerations.

This planning process followed a structured, phased approach aligned with FEMA's Local Mitigation Planning Policy Guide (2022), 44 CFR requirements, and guidance from the California Governor's Office of Emergency Services (Cal OES). This approach began with project initiation where the scope, timeline, and stakeholders were defined. Stakeholder and public engagement were prioritized to ensure representation from diverse groups, including historically underrepresented communities and climate-vulnerable populations.

Data collection and analysis leveraged updated hazard, climate, and vulnerability data from local, state, and federal sources, providing a foundation for enhanced risk and vulnerability assessments. Hazard profiles were updated to include climate projections and cascading impact scenarios. Mitigation strategies were revised and prioritized with a renewed focus on climate resilience and nature-based solutions. Strategies were also developed incorporating people with access and functional needs throughout each component of the AHMP. Finally, methods for monitoring and evaluation of mitigation efforts were defined in the plan maintenance and implementation strategy. Table 2-1 provides a timeline of the major plan update tasks and milestones over the planning process.

Table 2-1 AMHP Planning Timeline

Date	Tasks	People Involved
February 2025	Reviewed the 2020 AHMP and identified components that require update.	OEM AHMP Project Team
	Collected and reviewed existing documents, including the Threat and Hazard Identification and Risk Assessment (THIRA) along with resources for people with access and functional needs and people experiencing homelessness.	OEM AHMP Project Team
	Met with state Hazard Mitigation Planning Team.	OEM AHMP Project Team, Cal OES Mitigation Division
	Identified the initial list of stakeholders and ensured organizations that work with and represent people with access and functional needs were engaged in the planning process. External stakeholders include neighboring communities, local and regional agencies, and others.	OEM AHMP Project Team
	Conducted 2025 AHMP Kickoff Meetings with internal stakeholders.	OEM AHMP Project Team, Internal County Stakeholder Group, Cal OES Mitigation Division
	Determined hazards to be profiled including both natural (i.e., wildland fire, earthquake, etc.) and human-caused (i.e., cybersecurity, terrorism, etc.).	OEM AHMP Project Team, Internal County Stakeholder Group, External Stakeholder Group
	Drafted initial sections of the 2025 AHMP.	OEM AHMP Project Team
	Shared drafts of initial sections with internal and external stakeholders for their review.	OEM AHMP Project Team, Internal County Stakeholder Group, External Stakeholder Group, Cal OES Mitigation Division
	Met with internal and external stakeholders to obtain feedback on draft plan elements.	OEM AHMP Project Team, Internal County Stakeholder Group, External Stakeholder Group, Cal OES Mitigation Division

County of Los Angeles
All-Hazards Mitigation Plan

Date	Tasks	People Involved
March 2025	Developed the Public Outreach Engagement Plan to collect feedback from the public on the public draft of the 2025 AHMP.	OEM AHMP Project Team, Cal OES Mitigation Division
	Drafted subsequent sections of the 2025 AHMP including updating existing mitigation actions and developing new mitigation actions as needed.	OEM AHMP Project Team
	Shared drafts of the subsequent sections with internal and external stakeholders for their review.	OEM AHMP Project Team, Internal County Stakeholder Group, External Stakeholder Group, Cal OES Mitigation Division
	Met with internal and external stakeholders to obtain feedback on subsequent draft plan elements.	OEM AHMP Project Team, Internal County Stakeholder Group, External Stakeholder Group, Cal OES Mitigation Division
April/May 2025	Drafted final sections of the 2025 AHMP and produced a Final Draft AHMP.	OEM AHMP Project Team
	Shared Final Draft of the AHMP with internal and external stakeholders for their review.	OEM AHMP Project Team, Internal County Stakeholder Group, External Stakeholder Group, Cal OES Mitigation Division
	Met with internal and external stakeholders to obtain feedback on subsequent Final Draft AHMP.	OEM AHMP Project Team, Internal County Stakeholder Group, External Stakeholder Group, Cal OES Mitigation Division
	Produced Final AHMP.	OEM AHMP Project Team

2.2 Stakeholder Engagement

Inclusive stakeholder involvement was essential to the planning process. The County ensured broad representation and participation, consistent with the "Whole Community Approach" outlined in the 2023 Operational Area Emergency Operations Plan (OAEOP). Key stakeholders that comprised the Hazard Mitigation Advisory Committee included:

- County departments such as, but not limited to, Public Works, Public Health, and Regional Planning.
- Cities within the operational area (OA) and neighboring communities through Disaster Management Area Coordinators (DMACs) and city representation.
- Non-governmental organizations (NGOs), including environmental and disability advocacy groups.
- Special District partners managing critical infrastructure.
- Representatives of academia and school districts.
- Community representatives from Access and Functional Needs (AFN) populations and historically underrepresented populations.

Regular meetings, workshops, and focus groups were held to gather input and refine mitigation strategies. Stakeholders were contacted and invited to participate in the 2025 AHMP planning process through email (please see email template in Appendix B-3). Stakeholder feedback was documented and incorporated into the plan, ensuring diverse perspectives informed the process. Tables 2-2 and 2-3 includes a list of representatives of each agency that contributed to the planning process.

Table 2-2 Hazard Mitigation Advisory Committee – Internal Stakeholder Group

Department/ Agency	Name	Title	Planning Contribution
Los Angeles County Office of Emergency Management (OEM AHMP Project Team)	Michael Morin	Emergency Management Coordinator	Functioned as lead planners, led planning meetings, drafted plan, reviewed mitigation actions submitted by departments.
	Matthew Topoozian	Emergency Management Coordinator	

Department/ Agency	Name	Title	Planning Contribution
	Karen Haro	Emergency Management Coordinator	
	Girma Wollela	Emergency Management Coordinator	
Los Angeles County Department of Aging and Disabilities	Mike Tsao	Administrative Deputy	Attended planning meetings, reviewed section drafts, and provided feedback.
	Henry Lopez	Program Manager	
	Carin Anderson	Administrative Services Manager	
	Keilah Kelso	Administrative Services Manager	
Los Angeles County Chief Executive Office – Anti-Racism, Diversity, and Inclusion Initiative	Cesar Sanchez	Senior Analyst	Attended planning meetings, reviewed section drafts, and provided feedback.
Los Angeles County Chief Executive Office – Homeless Initiative	Onnie Williams III	Principal Analyst	Attended planning meetings, reviewed section drafts, and provided feedback.
Los Angeles County Chief Sustainability Office	Matthew Gosner	Climate Resilience Officer	Attended planning meetings, reviewed section drafts, and provided feedback.

Department/ Agency	Name	Title	Planning Contribution
Los Angeles County Department of Beaches and Harbors	Katharine de la Cruz	Administrative Services Manager	Attended planning meetings, reviewed section drafts, and provided feedback.
	Vanessa Huerta	Safety Officer	
Los Angeles County Department of Economic Opportunity	Maritza Dubie	Human Services Administrator	Attended planning meetings, reviewed section drafts, and provided feedback.
Los Angeles County Department of Health Services	Elaine Forsyth	Senior Nursing Instructor	Attended planning meetings, reviewed section drafts, and provided feedback.
	Isabel Sanchez	Disaster Services Specialist	
Los Angeles County Department of Human Resources	Kevin Halbritter	Deputy Compliance Officer	Attended planning meetings, reviewed section drafts, and provided feedback.
Los Angeles County Department of Parks and Recreation	Ramon Bernal	Disaster Services Analyst	Attended planning meetings, reviewed section drafts, and provided feedback.
Los Angeles County Department of Public Health	Elizabeth Rubin	Epidemiologist	Attended planning meetings, reviewed section drafts, and provided feedback.
Los Angeles County Department of Public Social Services	Manuel Gutierrez	Disaster Services Analyst	Attended planning meetings, reviewed section drafts, and provided feedback.

Department/ Agency	Name	Title	Planning Contribution
Los Angeles County Department of Public Works	Joseph Marble	Disaster Services Analyst	Attended planning meetings, reviewed section drafts, and provided feedback.
	Loni Eazell	Disaster Services Specialist	
Los Angeles County Department of Regional Planning	Thuy Hua	Supervising Planner	Attended planning meetings, reviewed section drafts, and provided feedback.
	Edgar De La Torre	Principal Regional Planner	
Los Angeles County Fire Department	Nick Duvally	Deputy Fire Chief	Attended planning meetings, reviewed section drafts, and provided feedback.
Los Angeles County Internal Services Department	Juan-Raul Cardenas	GIS Analyst	Attended planning meetings, reviewed section drafts, and provided feedback.
Los Angeles County Sheriff's Department	Jordan Kennedy	Sergeant	Attended planning meetings, reviewed section drafts, and provided feedback.

Table 2-3 Hazard Mitigation Advisory Committee – External Stakeholder Group

Department/Agency	Planning Contribution
Access Services	Attended planning meetings, reviewed section drafts, and provided feedback.
Alzheimer's Association California	Attended planning meetings, reviewed section drafts, and provided feedback.
California Governor's Office of Emergency Services	Attended planning meetings, reviewed section drafts, and provided feedback.
Catholic Charities	Attended planning meetings, reviewed section drafts, and provided feedback.

Department/Agency	Planning Contribution
City of Beverly Hills Emergency Management Division	Attended planning meetings, reviewed section drafts, and provided feedback.
City of Long Beach Disaster Preparedness & Emergency Communications	Attended planning meetings, reviewed section drafts, and provided feedback.
City of Los Angeles Emergency Management Department	Attended planning meetings, reviewed section drafts, and provided feedback.
Disability Community Resource Center	Attended planning meetings, reviewed section drafts, and provided feedback.
Disaster Management Area Coordinator, Area A	Attended planning meetings, reviewed section drafts, and provided feedback.
Disaster Management Area Coordinator, Area B	Attended planning meetings, reviewed section drafts, and provided feedback.
Disaster Management Area Coordinator, Area C	Attended planning meetings, reviewed section drafts, and provided feedback.
Disaster Management Area Coordinator, Area D	Attended planning meetings, reviewed section drafts, and provided feedback.
Disaster Management Area Coordinator, Area E	Attended planning meetings, reviewed section drafts, and provided feedback.
Disaster Management Area Coordinator, Area F	Attended planning meetings, reviewed section drafts, and provided feedback.
Disaster Management Area Coordinator, Area G	Attended planning meetings, reviewed section drafts, and provided feedback.
Disaster Management Area Coordinator, Area H	Attended planning meetings, reviewed section drafts, and provided feedback.
Eastern Los Angeles Regional Center	Attended planning meetings, reviewed section drafts, and provided feedback.
Emergency Network Los Angeles	Attended planning meetings, reviewed section drafts, and provided feedback.
Habitat for Humanity	Attended planning meetings, reviewed section drafts, and provided feedback.

Department/Agency	Planning Contribution
Harbor Regional Center	Attended planning meetings, reviewed section drafts, and provided feedback.
Lanterman Regional Center	Attended planning meetings, reviewed section drafts, and provided feedback.
Los Angeles County Office of Education	Attended planning meetings, reviewed section drafts, and provided feedback.
Los Angeles County Sanitation Districts	Attended planning meetings, reviewed section drafts, and provided feedback.
Los Angeles Metropolitan Transportation Authority	Attended planning meetings, reviewed section drafts, and provided feedback.
Los Angeles Regional Food Bank	Attended planning meetings, reviewed section drafts, and provided feedback.
Neighborhood Legal Services of Los Angeles County	Attended planning meetings, reviewed section drafts, and provided feedback.
Puente Hills Habitat Preservation Authority	Attended planning meetings, reviewed section drafts, and provided feedback.
South Central Los Angeles Regional Center	Attended planning meetings, reviewed section drafts, and provided feedback.
Westside Regional Center	Attended planning meetings, reviewed section drafts, and provided feedback.

2.3 Public Involvement and Outreach

Public outreach efforts aimed to foster transparency, inclusivity, and fortify public trust. The County engaged the public during the planning process through multiple media formats to share information and collect feedback taking into account language and other access and functional needs. A rolling outreach strategy was used to ensure that as each section was drafted and reviewed by planning stakeholders, it was concurrently made available for public commentary. To accomplish this, each section was posted to the Los Angeles County Hazard Mitigation Program website as it was completed by the planning team. A survey designed to gauge community perceptions of hazard risks and mitigation priorities was used on the website (Appendix D). This approach ensured that the public was a key partner in every step of the planning process and had a voice as

each section was being developed by the planning team. A social media campaign using all LA County OEM social media channels was initiated to direct the public to the survey.

To address equity, targeted outreach efforts focused on engaging historically underrepresented communities and AFN populations, using multilingual and accessible materials and culturally appropriate techniques. Aside from public outreach, stakeholders that work with or represent people with access and functional needs, people experiencing homelessness, and a diverse array of cultural groups were targeted to participate in the Hazard Mitigation Advisory Committee. These measures ensured that the public had meaningful opportunities to participate in shaping the plan.

2.4 Review and Incorporation of Existing Plans and Reports

The planning process included a comprehensive review of existing documents and protocols to ensure consistency and alignment. The 2020 All-Hazards Mitigation Plan served as the foundational document for this update. Additionally, key concepts from the 2023 Operational Area Emergency Operations Plan (OAEOP), such as Emergency Support Functions (ESFs) and disaster management areas, were integrated. The Los Angeles County Climate Vulnerability Assessment provided valuable insights into climate risks and social sensitivity, while local Climate Action Plans ensured alignment with municipal climate adaptation initiatives. Furthermore, the 2021 UASI THIRA (Threat and Hazard Identification and Risk Assessment) provided critical data for identifying evolving threats and capability targets, enhancing the accuracy and relevance of the plan. The demographic data from the 2020 U.S. Census was utilized to ensure an accurate representation of Los Angeles County's population, now estimated at over 10 million residents. The demographic breakdown includes 48% Hispanic or Latino, 26% White, 15% Asian, 8% African American, and 3% other, with over 40% speaking a language other than English at home, emphasizing the need for multilingual and culturally appropriate outreach.

Table 2-4 Existing Plans, Maps, and Reports

Plan, Map, or Report	Information to be Incorporated into the 2025 Updated AHMP
Los Angeles County Operational Area Emergency Operations Plan (2023)	Used to inform Section 6: Hazard Identification and Risk Assessment and Section 7: Mitigation Strategy
Los Angeles County 2035 General Plan (2024)	Safety element mitigation policies used to inform Section 7 – Mitigation Strategy
Los Angeles County Comprehensive Floodplain Management Plan (2021)	Used to inform Section 6: Hazard Identification and Risk Assessment and Section 7: Mitigation Strategy for elements related to flood hazards
County of Los Angeles Floodplain Management Plan Progress Report from (2024)	Used to inform Section 6: Hazard Identification and Risk Assessment and Section 7: Mitigation Strategy for elements related to flood hazards
County of Los Angeles Repetitive Loss Area Analysis Progress Report (2021)	Used to inform Section 6: Hazard Identification and Risk Assessment and Section 7: Mitigation Strategy for elements related to flood hazards
Los Angeles County 2045 Climate Action Plan (2024)	Used to inform Section 6: Hazard Identification and Risk Assessment, Section 7: Mitigation Strategy, and Section 4: Climate Change for elements related to hazard risk posed by climate change
Los Angeles County Fire Department Fire Plan (2023)	Used to inform Section 6: Hazard Identification and Risk Assessment and Section 7: Mitigation Strategy for elements related to wildland fire hazards
Our County: Los Angeles Countywide Sustainability Plan (2019)	Used to inform Section 6: Hazard Identification and Risk Assessment, Section 7: Mitigation Strategy, and Section 4: Climate Change for elements related to hazard risk posed by climate change
Los Angeles County Homeless Initiative Strategy Plan (2022)	Used to inform vulnerable populations information across all sections of the plan.
Disability Among Adults in Los Angeles County (2019)	Used to inform vulnerable populations information across all sections of the plan.
Southern California Earthquake Data Center's Earthquake Catalogs (Current as of 2025)	Historical seismic information used in Section 6: Hazard Identification and Risk Assessment.

Plan, Map, or Report	Information to be Incorporated into the 2025 Updated AHMP
Maritime Tsunami Response Playbooks: Background Information and Guidance for Response and Hazard Mitigation Use (2016)	Historical tsunami information used in Section 6: Hazard Identification and Risk Assessment.
FEMA Flood Insurance Study, Los Angeles County, California (2020)	Historical flood information used in Section 6: Hazard Identification and Risk Assessment.
U.S. Geological Survey (USGS): Rainfall and Landslides in Southern California (2015)	Historical landslide information used in Section 6: Hazard Identification and Risk Assessment.
Burn Scar Information and Maps	Historical fire information used in Section 6: Hazard Identification and Risk Assessment.

3 Community Profile

3.1 Los Angeles County Overview



Los Angeles County is the most populous county in the United States, encompassing a diverse array of communities, landscapes, and infrastructure. According to the most recent census data, Los Angeles County has a population of approximately 10 million residents of which more than 1 million reside in unincorporated areas. The County's demographics, geographic features, and economic activities present both unique opportunities and significant challenges for hazard mitigation planning. This updated community profile integrates insights from the 2023 Operational Area Emergency Operations Plan (OAEOP) and reflects changes in population trends, infrastructure development, and climate risks.

The County Operational Area (OA) consists of all political subdivisions within the geographical boundaries of Los Angeles County. It encompasses five supervisorial districts, eight Disaster Management Areas (DMAs), 88 incorporated cities, 80 school districts, and approximately 142 special districts.

3.2 Geography and Land Use



Spanning over 4,000 square miles, Los Angeles County features diverse terrain, including coastal plains, valleys, mountains, islands, and deserts. The County's varied geography includes multiple microclimates that influence its exposure to natural hazards, such as earthquakes, tsunamis, wildfires, floods, and landslides. Urban areas, particularly the City of Los Angeles and its surrounding metropolitan region, are densely populated and heavily developed. In contrast, rural and unincorporated areas often face unique vulnerabilities due to limited infrastructure and resources. Rural areas include the Angeles and Los Padres National Forests, which have small communities, campgrounds, and day use areas. There are also two islands within the County, Santa Catalina and San Clemente. The County also includes a significant amount of Wildland Urban Interface (WUI) areas where residential and commercial development meets underdeveloped wildland with vegetative fuels. Land use within the County is equally diverse, with a mix of residential, commercial, industrial, agricultural, and open spaces. Recent urban development in densely populated areas has increased impervious surfaces like concrete and asphalt, which retain heat and create urban heat islands (UHI) that are much hotter than nearby rural areas. This phenomenon elevates temperatures, especially in low-income communities lacking green spaces for cooling. Additionally, urbanization affects stormwater management by reducing natural drainage and exacerbating flooding risks in low-lying areas.

These trends underscore the need for sustainable planning strategies, such as promoting green infrastructure, enhancing stormwater systems, and mitigating heat islands through tree planting and reflective materials. The County's diverse land use must be carefully managed to reduce vulnerabilities while supporting economic growth and environmental sustainability.

3.3 Social Vulnerability

Social vulnerability is a crucial component to Los Angeles County's hazard mitigation planning. The County is home to a diverse population with disparities in income, housing stability, and access to resources. The Los Angeles County Anti-Racism, Diversity, and Inclusion (ARDI) Initiative created a comprehensive Equity Explorer, which is a geospatial tool that explores multiple equity data points across Los Angeles County. The ARDI Equity Explorer includes various layers that visualize social equity, economic opportunity, housing and homelessness, health, justice, built environment, and disaster recovery data. The public can access this data at ceo.lacounty.gov/ardi/tools. Maps created using data from the ARDI Equity Explorer are in Appendix A-8.

The US Centers for Disease Control and Prevention (CDC) defines social vulnerability as a community's capacity to prepare for and respond to the stress of hazardous events ranging from natural disasters to human caused threats. The CDC's Social Vulnerability Index (Figure 3.1) is designed to identify and quantify communities experiencing social vulnerability.

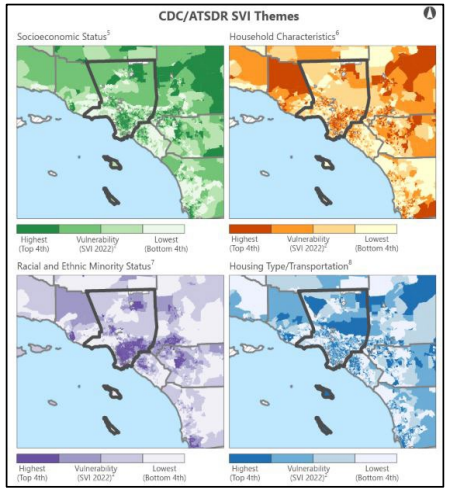


Figure 3.1 CDC Social Vulnerability Index (CDC 2022)

The most recent CDC Social Vulnerability Index score from 2022 for Los Angeles County indicated a high level of vulnerability across four themes: socioeconomic status, household characteristics, racial and ethnic minority status, and housing type/transportation.

Vulnerable populations identified for Los Angeles County that will be considered in the AHMP include:

- **Low-Income Residents**: Individuals living below or near the poverty line are often disproportionately affected by disasters due to limited financial resources for emergency preparedness, response, and recovery.

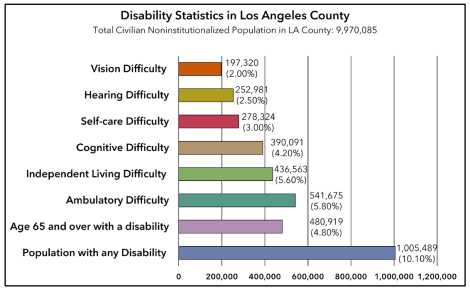


Figure 3.2 Disability Statistics in Los Angeles County (OAEOP 2023)

- **People with Access and Functional Needs (AFN)**: Individuals with Access and Functional needs have increased challenges in preparedness, evacuation, sheltering, accessing emergency services and recovery. Access and Functional Needs include but are not limited to people who have any combination in varying degree of: physical disabilities, intellectual disabilities, developmental disabilities, mental health-related issues, visual impairments, hearing impairments/deaf, mobility impairments, or chronic conditions. AFN also include older adults, infants and children, people living in institutionalized settings, people living below the poverty line or experiencing homelessness, people with limited English proficiency or are non-English speakers, or people who are transportation disadvantaged.

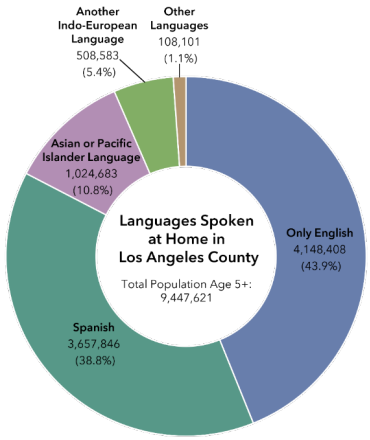


Figure 3. 3 Breakdown of Language at Home in Los Angeles County (OAEOP 2023)

- **People Experiencing Homelessness (PEH)**: With an estimated over 75,000 individuals experiencing homelessness, this population is particularly at risk during extreme weather events and other disasters.
- **Immigration Status**: Fear of engaging with government services based on immigration status can prevent residents from accessing critical resources.

- **Limited English Proficiency:** Over 40% of residents speak a language other than English at home, highlighting the need for multilingual and culturally appropriate outreach efforts. Language accessibility is critical to ensure all residents and visitors can obtain information and services during a disaster. See Figure 3.3 for a breakdown of languages spoken at home in Los Angeles County not including American Sign Language.

The figure below highlights certain variables in Los Angeles County that may increase vulnerability to emergencies and disasters. To address these vulnerabilities, the County's mitigation planning includes equitable strategies designed to reduce risk and enhance resilience among these populations. Targeted outreach, improved access to resources, preparedness education events, and collaboration with community organizations are integral to these efforts.

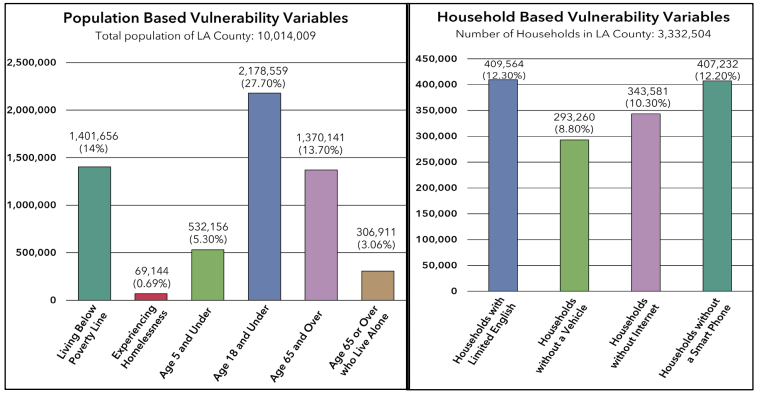


Figure 3.4 Los Angeles County Vulnerability Variables (OAEOP 2023)

The Federal Emergency Management Agency (FEMA) maintains the National Risk Index, a mapping tool that assesses 18 possible hazards a jurisdiction is susceptible to in combination with the amount of loss that could result from those hazards. Los Angeles County ranks as the community with the most risk in the United States according to the FEMA National Risk Index. According to the National Risk Index, hazards with the highest risk for Los Angeles County include earthquake, wildfires, extreme heat, flooding, high winds, and landslides.

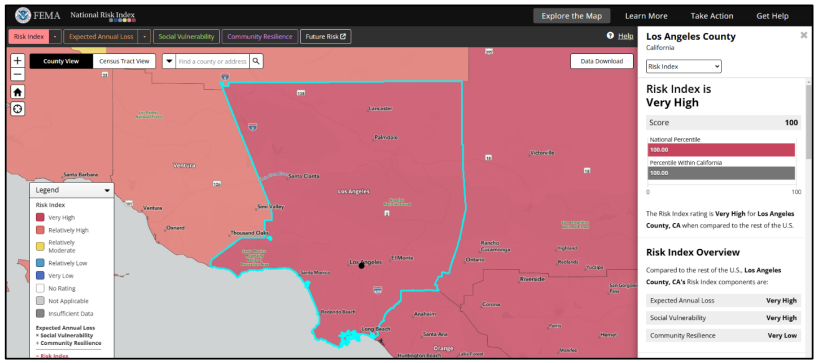


Figure 3.5 FEMA National Risk Index (2025)

3.4 Economy and Critical Infrastructure

Los Angeles County is a global economic hub, hosting industries such as entertainment, technology, manufacturing, and international trade. The Port of Los Angeles and the Port of Long Beach collectively form one of the world's busiest trade gateways, underscoring the importance of protecting critical infrastructure from hazards including those exacerbated by climate change. Critical facilities provide services and functions essential to a community, especially during and after a disaster. Common types of critical facilities include but are not limited to fire stations, police stations, hospitals, schools, and utilities. Critical facilities may also include places that can be used for sheltering, cooling centers, staging purposes, or other large public gathering spots such as community centers and libraries. Critical facilities include those operated by non-governmental and business partners vital for redevelopment or

economic security. When these are affected by a disaster, the County provides businesses and workers impacted by the disaster with vital information and resources. This allows them to maneuver effectively through disaster response toward recovery using its network of job centers and business hubs.

Other critical infrastructure includes the facilities and industries that enable all facets of society to function, including but not limited to the following community lifelines:

- **Safety and Security**: The myriad of local law enforcement, fire and rescue, emergency management, schools, and other government services that maintain public safety and security.
- **Communications:** The interconnected network of infrastructure owners and operators of communications systems such as internet, telephone, cellular and other communications towers, cable, satellite, and more.
- **Transportation Networks**: The County's extensive network of roadways, highways, railways, transit systems, and airports is essential for daily operations and disaster response.
- **Energy Systems**: Power generation facilities, energy distribution networks, and pipelines are vulnerable to multiple types of hazards and threats.
- **Water and Wastewater Systems**: Drought conditions and aging infrastructure at the over 220 different water agencies in Los Angeles County pose risks to water availability and quality.
- **Healthcare Facilities**: Over 100 hospitals and numerous clinics serve the County, requiring robust contingency plans to maintain operations during disasters.
- **Food and Shelter:** The vast system of food production (i.e., agriculture), distribution, and retail along with community housing or sheltering.

3.5 Climate and Environmental Conditions

Los Angeles County faces escalating risks from climate change, significantly impacting its environment, economy, and communities. These challenges include rising temperatures, prolonged droughts, more frequent and severe extreme weather events, and their cascading effects. These risks highlight the critical need for adaptive planning to protect vulnerable populations, infrastructure, and natural resources. Key climate-

related considerations referenced in the Los Angeles County Climate Action Plan that will be addressed in this AHMP include, but are not limited to:

- **Extreme Weather Events:** Extreme temperatures in the Los Angeles region are expected to increase. Both dry and wet extremes are projected to intensify, leading to longer dry periods than historically experienced. These dry periods are expected to be followed by significantly wetter conditions, including atmospheric rivers bringing more intense rainfall. This pattern may result in increased water scarcity, mudslides, and flooding.
- **Sea-Level Rise**: Coastal communities are at heightened risk of flooding and erosion, threatening homes, businesses, and critical infrastructure. Sea level rise can exacerbate the impacts of high tides, storm surges, and heavy precipitation, and can lead to increased coastal flooding and shoreline erosion.
- **Increasing Wildfire Risk**: Climate change has intensified wildfire seasons, particularly in the County's mountainous, wildland urban interface (WUI), and new and undeveloped regions. Wildfires are projected to increase in frequency and intensity including in some areas not historically impacted by wildfire.

In response, the County has prioritized integrating climate adaptation strategies into its hazard mitigation planning, as outlined in the Climate Vulnerability Assessment and the OAEOP.

3.6 Regional Collaboration and Planning Efforts

Los Angeles County's size and complexity necessitates collaboration with numerous jurisdictions, agencies, and community organizations. The County is designated as the Operational Area Coordinator and functions as an intermediate level in the State of California's Standardized Emergency Management System (SEMS). In accordance with SEMS, the County serves as the communications and coordination link between local governments within Los Angeles County and the state government. Partnerships with academic institutions, non-profits, and private sector stakeholders support data collection, public engagement, and innovative mitigation strategies. Additionally, the County has also adopted Emergency Support Functions (ESFs) as the primary emergency management coordination structure. ESFs group function-specific stakeholders who will coordinate throughout all phases of emergency management,

including function-specific mitigation activities. For more information on regional emergency management collaboration and planning, reference the OAEOP.

3.7 Implications for Hazard Mitigation Planning

Understanding the community is a critical aspect in hazard mitigation planning. This community profile will inform key considerations in subsequent sections of the AHMP including but not limited to the following:

- **Targeted Outreach:** Include vulnerable populations and the business community in the planning process through equitable public outreach.
- **Infrastructure Resilience:** Prioritize the protection of critical infrastructure, including ports and transportation networks, energy systems, and water and wastewater systems, among others.
- **Climate Adaptation:** Develop strategies to mitigate the impacts of climate change, focusing on urban heat islands, sea-level rise, and wildfire risks.
- **Regional Coordination:** Strengthen direct collaboration within the OA between the County, local jurisdictions, special districts, unified school districts, the business community and cross-sector non-governmental partners to enhance awareness, preparedness, and response capabilities.
- **Transparent & Open Communication:** Ensure communications are accessible, and clear to advance public trust and safety. Develop dashboards to demonstrate progress.

4 Climate Change

4.1 Climate Change Overview

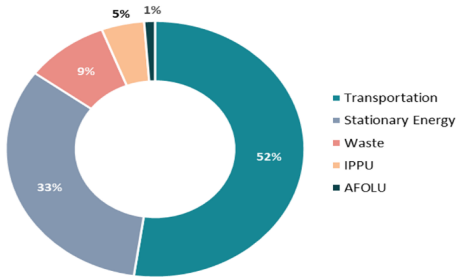
Climate change refers to the changing effect of the Earth's climate system over time, including changes in temperature, precipitation, and wind patterns. Climate change had significant impacts on Los Angeles County, affecting various aspects of life, environment, infrastructure, and sustainable development, and presents increasing risks from amplified hazards and changing baselines (e.g., sea level) into the future. The rate of climate change has significantly accelerated over the last three decades and trends continues. This plan addresses the effects of climate change related to disasters within the County and strategies to mitigate risks, focusing on preparedness, resilience and equity.

Climate change contributes to more frequent and intense disasters, such as floods, wildfires, drought and excessive heat. Rising temperatures and changing weather patterns pose health risks, like heat-related illnesses, respiratory issues, and the spread of diseases. Hazard mitigation efforts aim to reduce the impacts and effects of greater hazards due to climate change. The economic impact of climate change has been substantial, affecting industries such as agriculture, tourism, and insurance with increasing risks due to accelerating climate changes.

Greenhouse Gas (GHG) emissions are the main driver of climate change, which causes increased frequency, duration, and severity of extreme weather and climate-related disasters. Climate change exacerbates air pollution, leading to poor air quality and health issues. GHG emissions from residential buildings, commercial and institutional facilities, manufacturing industries and construction, energy industries, oil and natural gas systems. transportation, fossil energy, wildfires and other sources contribute to increased particulate matter and other pollutants in the air.

4.2 Integrating Climate Change into Hazard Profiles

Integrating climate change into hazard profiles involves assessing the current and future impacts of climate change on various hazards and incorporating this information into planning and mitigation strategies. This section highlights how climate change relates to these hazards and how the county is addressing climate change through hazard mitigation efforts which help protect the county's residents and economies from the adverse effects of climate changes and climate-amplified events.



Abbreviations: AFOLU = agriculture, forestry, and other land use; IPPU = industrial processes and product use

Figure 4.1 Sources of GHG Emissions from within Los Angeles County (LA County 2024; 2045 Climate Action Plan)

4.2.1 Extreme Heat

Increasing temperatures and high heat events is one of the most conspicuous results of and a direct correlation between GHG pollution and climate change. Excessive temperatures in the Los Angeles region are expected to increase significantly more very hot days and warm nights. In addition to increasing baseline temperatures and extreme heat due to climate change, heat islands exacerbate temperatures and high heat events. As development occurs and darker paved surfaces replace open land and vegetation, these areas become warmer forming an "island" of heat. Los Angeles County experiences more frequent and excessive heat due to climate change. This is currently a major risk and with unmitigated GHG emissions increasing heat will lead to even greater health issues, increased energy demand for cooling, and other strains on infrastructure.

4.2.2 Flooding

Flooding in Los Angeles County occurs due to extreme rainfall events causing flash floods, riverine flooding, and increased surface water. Coastal areas in Los Angeles County are vulnerable to sea- level rise (SLR), which exacerbates coastal hazards like floods, storm surges, and chronic erosion. Other related hazards include flooding near

the mouths of streams and channels, landslides, and seawater well intrusion. SLR exacerbates the impacts of high tides, storm surges, and heavy precipitation flooding, and continued SLR will lead to more life safety concerns and increased damage to property and infrastructure.

4.2.3 Drought

Prolonged droughts have become more common, affecting the water supply, agriculture, and ecosystems of Los Angeles County. Dry and wet extremes are projected to increase and are likely to cause drier periods than what the region has historically experienced.

Southern California projected to get drier, while Northern California will increase in temperature. This will result in loss of snowpack within the Sierra Nevada Mountain range, meaning less water for all Californians including farmers, residents, and utilities. The State Water Resource Control Board proclaimed several water conservation emergency regulations due to severe drought conditions that requires commercial, industrial, and residential conservation efforts. Proclamations include:

- **January 4, 2022:** State Water Board adopted the prohibited wasteful water uses emergency regulation
- **May 24, 2022:** the State Water Board adopted the emergency regulation to ban decorative grass watering like non-functional turf irrigation
- **December 7, 2022:** the State Water Board readopted the prohibited wasteful water uses emergency regulation,
- **May 26, 2023:** the State Water Board readopted the emergency regulation to ban decorative grass watering.

4.2.4 Wildfire

A wildfire is an unplanned and uncontrolled fire in an area of combustible vegetation. These fires can easily spread beyond the natural areas primarily involving and have a potential to cause damages outside of the perimeter. Wildfire probability depends on local weather conditions, outdoor activities and any preceding conditions (e.g., lots of rain leading to vegetation growth and then drying conditions), and a potential ignition (e.g., lightning strike, arson, debris burning, electrical equipment failure, car tailpipe, etc.). The frequency and intensity of wildfires has increased driven by higher

temperatures, lower precipitation, lower relative humidity, and prolonged droughts. These events have caused loss of life, destroy and/or damage to property, infrastructure, the environment and pose greater risks due to historical development patterns. The timeline of major wildfire events and acreage burned in Los Angeles County is listed at Section 6.2 of the plan.

4.3 Climate Mitigation Strategies

Los Angeles County is actively addressing climate change and implementing hazard mitigation strategies to reduce its impacts and build long-term resilience. The County faces increasing risks from excessive heat, wildfires, droughts, floods, and sea-level rise, all of which threaten communities, infrastructure, and natural resources.

To address many of these challenges, the County has developed comprehensive climate plans and strategies that integrate climate adaptation, sustainable land use, emergency preparedness, and environmental conservation. By enforcing building codes, investing in green infrastructure, and strengthening community preparedness, Los Angeles County aims to minimize risks and enhance disaster resilience. These efforts align with state and federal climate policies and are designed to protect both current and future generations while encouraging a more sustainable and livable environment for all.

4.3.1 Climate Resilience Plans and Actions

- **Los Angeles County 2045 Climate Action Plan (2045 CAP):** Establishes aggressive targets to reduce greenhouse gas emissions and achieve carbon neutrality by 2045.
- **Water Conservation & Drought Resilience Measures:** Implements mandatory water restrictions, promotes rainwater harvesting, and expands groundwater recharge and water recycling projects.
- **Wildfire Mitigation & Vegetation Management Programs:** Enforces Wildland Urban Interface (WUI) codes, increases forest management techniques, aligned with Traditional Ecological Knowledge (TEK) principles and practices of our native indigenous communities, and strengthens fire-resistant building and landscape requirements.

- **Green Infrastructure & Urban Cooling Initiatives:** Expands tree planting aligned with TEK principles and practices, investigates removing hard (paved) surfaces, and planting groundcover, utilizes and promotes public cooling centers and home heat preparedness, and encourages the use of reflective "cool" roofing and surfaces to mitigate the urban heat island (UHI) effect.
- **Heat Action Plan:** Develops strategies to reduce the adverse health impacts of excessive heat through public shade structures, cooling centers, building codes, and increased public awareness campaigns for all susceptible to extreme heat.

These strategic actions reflect Los Angeles County's commitment to tackling climate change. By integrating proactive policies, indigenous-informed practices, community-driven solutions, and resilient infrastructure, Los Angeles County, is not only mitigating current risks but also preparing for a future where communities can thrive in an ever-changing dynamic environment.

4.4 Climate Change Conclusion

Through proactive policies and community engagement, Los Angeles County strives to navigate the complexities of a changing climate and safeguard its people, environment, infrastructure and economies. This approach helps minimize the risks and impacts associated with climate-related hazards. Addressing climate change in hazard mitigation help enhance safer, healthier, and more sustainable communities.

5 Integrating Access and Functional Needs (AFN) into Hazard Mitigation

5.1 AFN Introduction

Modern hazard mitigation planning increasingly recognizes that resilient communities must address the needs of all residents –including those with access and functional needs (AFN). Historically, individuals with disabilities (i.e. including but not limited to, youth, those economically depressed, pregnant, etc.), chronic health conditions, language barriers, or transportation disadvantages have been underrepresented in emergency planning. As evidenced by the best practices for stakeholder inclusion and further supported by national preparedness frameworks, integrating AFN considerations leads to plans that are more inclusive and effective. By proactively engaging AFN populations and support agencies in every phase, from preparedness through recovery, a hazard mitigation plan can reduce losses, improve evacuation and sheltering outcomes, and build trust between emergency management agencies and the communities they serve.

5.2 Inclusion of AFN and Vulnerable Populations in Planning

A major component of effective mitigation planning is a "whole community" approach. Incorporating AFN voices into the planning process is crucial because these stakeholders offer real-world insights into the challenges they face during emergencies. Key steps to this process include, but are not limited to:

- **Stakeholder Engagement:** Ensure that representatives from disability advocacy groups, community-based organizations, and service providers (such as local health departments and transportation agencies) are engaged early in the planning process. Their firsthand experiences help identify practical barriers that might otherwise be overlooked.
- **Public Participation:** Incorporating public stakeholders through meetings, surveys, and other outreach to capture the diverse needs of AFN populations. This input is vital to overcoming historical marginalization and ensuring that mitigation actions are relevant and equitable to the entire population.
- **Ongoing Interagency Collaboration:** Develop a hazard mitigation planning advisory committee and interagency working groups that include AFN stakeholders. These groups can guide both the planning process and the review of existing plans, ensuring that AFN issues are fully integrated from the outset.

5.2.1 Integrating AFN into the Overall AHMP

Integrating AFN considerations is not a stand-alone task; it must be interlaced throughout the entire hazard mitigation planning process. This includes:

- **Risk Assessments:** Incorporate AFN data into all risk assessments to ensure that the specific vulnerabilities of these populations are reflected in hazard maps and vulnerability index data.
- **Mitigation Strategy Development:** Ensure that every mitigation action is examined for its impact on AFN populations. For example, when planning for flood control or wildfire prevention projects, review how these projects can be improved to meet the needs of people with access and functional needs.
- **Plan Review and Update:** Ensure planning processes include regular AFN review and updates. Includes but not limited to:
  - Surveys of community needs
  - Consultations with AFN advisory groups
  - Integration of new technological or infrastructural solutions
- **Funding and Resource Allocation:** Clearly identify funding streams and resource commitments for AFN-specific projects. This could involve targeted grants from federal programs (e.g., Hazard Mitigation Assistance), state funding dedicated to accessible infrastructure improvements, and local resources such as the Productivity Investment Fund that can be accessed to improve the effectiveness and efficiency of County operations.

5.3 Assessment of AFN Needs

Understanding the specific needs of AFN populations requires both quantitative and qualitative approaches:

- **Data Collection and Risk Assessment:** Use existing resources, community surveys, outreach and risk assessments to help identify the number and types of individuals with AFN at the local community level. Evaluate the regional geographic distribution, vulnerabilities, and specific requirements before and after emergencies.

- **Frameworks for Analysis:** Adopt structured methodologies such as C-MIST (Communication, Maintaining Health, Independence, Support, Safety, and Transportation) to assess/ document AFN requirements.



- **C-MIST Explanation**
  - **Communication**: Individuals with hearing, vision, cognitive, or speech limitations may require alternative communication methods to receive or express information during emergencies.
  - **Medical / Health Needs**: People with complex medical conditions rely on medications, medical equipment, or specialized care to maintain their health and prevent complications.
  - **Independence**: Those who use mobility devices, assistive technology, or service animals need uninterrupted access to maintain their independence and daily functions.
  - **Supervision & Safety**: Some individuals require continuous support for safety, comfort, or emotional well-being, including those with memory issues, psychiatric conditions, or intellectual disabilities.
  - **Transportation**: Individuals without personal transportation or with mobility limitations need accessible and reliable options, especially in emergencies and evacuations.
- **Integrating Vulnerability Assessments:** Leverage tools from local climate vulnerability assessments and hazard mitigation plan reviews to identify areas where AFN populations overlap with high-risk zones (e.g., flood plains,

wildfire-prone areas). This integration helps prioritize mitigation actions in regions where vulnerable populations are most exposed.

5.4 Coordination with AFN Support Agencies

Effective mitigation planning requires robust coordination with both governmental and nongovernmental agencies that serve AFN populations. Best practices include:

- **Formal Partnerships:** Establish relationships and partnerships with agencies such as public health departments, social services, transportation authorities, community-based organizations, and disability advocacy organizations. These partnerships ensure that there is clear, ongoing communication and that roles and responsibilities are delineated before, during, and after disasters.
- **Joint Training and Exercises:** Conduct regular joint meetings, and exercises that include AFN components and identify additional resources to support the needs of the AFN community. These actions will help prepare all stakeholders to work together during a crisis and help identify gaps in current plans.
- **Outreach and Information Dissemination:** Ensure that all information, both pre-incident preparedness messages, response measures and post-incident recovery plans are accessible to all audiences. This includes using multiple languages, various communication formats (e.g., large-print, audio, sign-language, and digital formats), and culturally appropriate messaging to reach all segments of the community.

5.5 AFN Conclusion

A hazard mitigation plan builds a foundation for a resilient, inclusive community. By ensuring that AFN and other vulnerable populations are included in every phase of planning, from initial stakeholder engagement to the development of tailored mitigation actions and coordinated response strategies, communities can minimize disaster impacts and foster long-term resilience. Drawing on best practices from national frameworks and local planning guides, and by implementing ADA-compliant shelter operations, emergency managers can create a plan that truly serves every member of the community. This inclusive approach not only saves lives and property during disasters but also strengthens community trust and the overall effectiveness of emergency management efforts.

6 Hazard Identification and Risk Assessment

6.1 Hazard Identification Overview

The hazard identification and risk assessment process provide a foundation for Los Angeles County's hazard mitigation planning efforts by identifying, profiling, and assessing the risks associated with natural, technological, and human-caused hazards. This section builds on the framework established in the 2020 Hazard Mitigation Plan, incorporating insights from the 2023 Operational Area Emergency Operations Plan (OAEOP), the 2024 Los Angeles Threat and Hazard Identification and Risk Assessment (THIRA), the Los Angeles County Climate Vulnerability Assessment, the State of California Hazard Mitigation Plan (SHMP), and the Federal Emergency Management Agency (FEMA) National Risk Index.

Based on these sources hazards were included and addressed in the 2025 AHMP according to their frequency, severity and impact to Los Angeles County, see below Table 6-1. Hazards that did not meet the threshold of moderate risk will not be prioritized within the plan. Additionally, three new natural hazards (Extreme Heat, Drought, and Severe Wind/Tornado) and four human-caused hazards (Mass Violence, Cyber Incidents, Transportation Incidents, and Public Health Emergencies) are included in the 2025 AHMP.

Table 6-1 Hazard Inclusion/ Omission

Hazard	Comment
Earthquake	Hazard is included in the plan due to its high frequency, severity, and impact to Los Angeles County.
Wildfire	Hazard is included in the plan due to its high frequency, severity, and impact to Los Angeles County.
Heat Wave	Hazard is included in the plan due to its high frequency, severity, and impact to Los Angeles County.
Tornado	Hazard is included in the plan due to its high frequency, severity, and impact to Los Angeles County. Tornado is incorporated with the Severe Wind/ Tornado hazard profile.
Land Movement	Hazard is included in the plan due to its high frequency, severity, and impact to Los Angeles County.

Hazard	Comment
Lightning	Hazard is included in the plan due to its high frequency, severity, and impact to Los Angeles County. Lightening is incorporated with the Wildfire and Flooding hazard profiles.
Flooding	Hazard is included in the plan due to its frequency, severity, and impact to Los Angeles County. The Flooding hazard profile incorporates both Riverine and Coastal Flooding.
Drought	Hazard is included in the plan due to its frequency, severity, and impact to Los Angeles County.
Strong Wind	Hazard is included in the plan due to its frequency, severity, and impact to Los Angeles County. Strong Wind is incorporated with the Severe Wind and Tornado hazard profile.
Tsunami	Hazard is included in the plan due to its frequency, severity, and impact to Los Angeles County.
Winter Weather	Hazard is omitted from the plan due to its minimal frequency, severity, and impact to Los Angeles County.
Hail	Hazard is omitted from the plan due to its minimal frequency, severity, and impact to Los Angeles County.
Avalanche	Hazard is omitted from the plan due to its minimal frequency, severity, and impact to Los Angeles County.
Cold Wave	Hazard is omitted from the plan due to its lack of frequency, severity, and impact to Los Angeles County.
Hurricane	Hazard is omitted from the plan due to its lack of frequency, severity, and impact to Los Angeles County.
Ice Storm	Hazard is omitted from the plan due to its lack of frequency, severity, and impact to Los Angeles County.
Volcanic Activity	Hazard is omitted from the plan due to its lack of frequency, severity, and impact to Los Angeles County.

Los Angeles County faces a wide range of hazards due to its geographic diversity, population density, and economic significance. The following hazards were identified and prioritized from the previously mentioned sources based on historical occurrences, potential impacts, and future risks:

1. Wildfire
2. Earthquake
3. Extreme Heat
4. Drought
5. Flooding
6. Dam Failure
7. Land Movement
8. Tsunami
9. Severe Wind and Tornado
10. Mass Violence
11. Cybersecurity Incidents
12. Transportation Incidents
13. Public Health Emergencies

Among these hazards, six were identified to be potentially exacerbated by climate change including wildfire, extreme heat, drought, flooding, land movement, and severe wind and tornadoes. Additional human-caused hazards were included based on the 2024 THIRA including mass violence, cybersecurity incidents, transportation incidents, and public health emergencies. The results of the public Personal Disaster Impact Survey validated that these hazards are of significant concern to county residents. A risk assessment table comparing hazards to critical infrastructure is in Appendix C.

Table 6-2 Changes in Development and Vulnerability

Hazard	Change (Increase/ Decrease)	Reason
Earthquake	No Change	While new construction adheres to modern seismic codes aging infrastructure in high seismic zones remain vulnerable. Continued population growth in older neighborhoods with limited

Hazard	Change (Increase/ Decrease)	Reason
		retrofitting increases overall exposure.
Wildfire (Lightning)	Increase in Vulnerability	Urban expansion into Wildland-Urban Interface (WUI) areas has increased the number of homes at risk. Post 2020 development in high fire severity zones has continued, though defensible space regulations and new fire-safe planning are improving resilience for new builds.
Extreme Heat	Increase in Vulnerability	Population density, urban heat islands, and development in inland valleys increases exposure. Older multi-family units without air conditioning remain a concern. More outdoor workers and people experiencing homelessness (PEH) add to vulnerable population.
Land Movement	Stable to Slight Increase	Most new development avoids known landslide-prone areas due to zoning and geotechnical review. However, climate-driven precipitation variability and wildfires continue to destabilize slopes in developed areas.
Flooding (Lightning)	Increase in Vulnerability	New impervious surfaces from development increase stormwater runoff. Older flood control infrastructure is strained under heavier, more frequent rain events.

Hazard	Change (Increase/ Decrease)	Reason
Drought	Increase in Vulnerability	Continued population growth and water demand in arid and semi-arid zones has outpaced gains in conservation. Agricultural vulnerability persists in high desert areas.
Severe Wind and Tornado	Increase in Vulnerability	Los Angeles County is experiencing more frequent and intense wind events, including tornadoes. As urban development expands, tree canopies and overhead utilities in densely developed areas continue to contribute to cascading hazards. In response, efforts are underway to underground utility lines in high-risk areas.
Tsunami	Stable	Revised tsunami inundation maps have refined the at-risk zones. New developments in coastal areas are largely outside the updated hazard areas or comply with stricter coastal building codes.
Dam Failure	Stable/ Slight Increase	While no new major dams have been constructed in recent years, downstream development continues to increase population and critical infrastructure exposure within inundation zones.



6.2 Wildfire

6.2.1 Nature

Wildfires are fast-moving, uncontrolled fires that consume vegetation and rapidly spread, often threatening lives, structures, and infrastructure. These fires can be ignited by natural causes, such as lightning, or human activities, including unattended campfires, downed power lines, and arson. The increasing frequency, duration, and intensity of wildfires in Los Angeles County are possibly linked to the changing climate, with hotter temperatures, prolonged droughts, and reduced humidity levels making the region highly susceptible to fires.

Factors Influencing Wildfire Behavior

- **Topography**: Fires spread more rapidly on steep slopes and are often driven by the Santa Ana winds.
- **Fuel Load**: Dense, dry vegetation and high tree mortality increase fire intensity.
- **Weather Conditions**: High temperatures, strong winds, and low humidity elevate fire risk, with the changing climate contributing to a lengthened fire season.

WILDFIRE
KEY POINTS

1. **Nature**
Wildfires are fast-moving, climate-exacerbated hazards driven by dry vegetation, wind, and terrain, often ignited by lightning or human activity.

2. **Location**
High-risk wildfire areas are concentrated in the foothill areas and along the wildland-urban interface (WUI) in both SRA and LRA zones.

3. **Extent**
Over 1,000 square miles in Los Angeles County are classified as Very High Fire Hazard Severity Zones, with wildfires causing widespread secondary hazards.

4. **Vulnerability**
More than 1.2 million residents—especially in WUI communities with limited evacuation routes—face increased wildfire risk, particularly vulnerable populations.

5. **Mitigation and Preparedness**
Key strategies include defensible space enforcement, fire-resistant construction, CWPPs, vegetation management, and coordinated evacuation planning.

Wildfires also create secondary hazards such as poor air quality, landslides, flooding, and debris flows—especially in areas with recent burn scars where vegetation loss increases soil instability.

6.2.2 Location

Los Angeles County is one of the most wildfire-prone regions in the United States. Based on the Department of Forestry and Fire Protection (CAL FIRE) Fire Hazard Severity Zone (FHSZ) maps, significant wildfire risk exists in the Santa Monica Mountains, San Gabriel Mountains, Palos Verdes Hills, and Puente Hills. The 2024 THIRA and Los Angeles County Climate Vulnerability Assessment identify an increasing risk to communities located in or near these high-risk areas.

Los Angeles County has three primary wildfire management zones:

- **Federal Responsibility Areas (FRAs):** Lands administered or controlled by the federal government where federal agencies have administrative and protection responsibility for wildfires.
- **State Responsibility Areas (SRAs):** Wildland areas where CAL FIRE is responsible for suppression efforts.
- **Local Responsibility Areas (LRAs):** Developed regions where local agencies, such as Los Angeles County Fire Department (LACoFD), provide fire protection.

For a better visual representation of this Wildfire Hazard within the LA County planning area, please reference Appendix A. Included in Appendix A are several Fire Hazard Severity Zone maps for reference.

6.2.3 Extent

According to CAL FIRE's Fire Hazard Severity Zone (FHSZ) maps, Los Angeles County contains:

- 386.06 square miles (8.11%) classified as Very High Fire Hazard Severity Zone (FHSZ) in Local Responsibility Areas, LRAs.
- 625.01 square miles (13.13%) classified as Very High (FHSZ) in State Responsibility Areas, SRAs.

Wildfires pose a significant threat not only through the immediate damage they cause to lives, property, and natural resources, but also through the secondary hazards that continue after the flames are extinguished.

In the aftermath of a fire, communities often face increased risks of flash floods, debris flows, and degraded air quality. These post-fire impacts can compound the initial destruction, placing additional strain on infrastructure, health systems, and recovery efforts.

6.2.4 History

Los Angeles County has experienced numerous devastating wildfires in recent decades, including:

- **Canyon Fire (1968) –** Burned 22,000 acres, destroyed 147 homes, and led to mass evacuations.
- **Old Topanga Fire (1993) –** Consumed 16,516 acres, destroying 388 structures and causing three fatalities.
- **Sayre Fire (2008) –** Destroyed 489 structures, including over 600 mobile homes.
- **Station Fire (2009) –** The largest fire in Los Angeles County history, burning 160,577 acres, destroying 209 structures, and causing two firefighter fatalities.
- **Woolsey Fire (2018) –** Burned 96,949 acres, destroyed 1,643 structures, and resulted in three fatalities.
- **Bobcat Fire (2020) –** Scorched 115,796 acres, destroying 171 structures and damaging numerous infrastructures in the Angeles National Forest.
- **Palisades Fire (2025) –** Resulted in significant destruction and loss of life, burning 23,707 acres, destroyed approximately 6,833 structures, and causing 12 civilian fatalities.
- **Eaton Fire (2025) –** Resulted in significant destruction and loss of life, burning 14,021 acres, destroying approximately 9,418 structures, and causing 17 civilian fatalities.

These fires highlight the increasing frequency and intensity of wildfires, emphasizing the urgent need for stronger mitigation and preparedness efforts.

The Los Angeles County area has experienced federally declared wildfires and are shown in the table below. There have been no state proclamations for wildfires in the last five years.

Federally Declared Wildfire/Fire Management Assistance Declaration in Los Angeles County from 1/1/2020 to 3/28/2025

Date	Incident Name	No.	Category
1/8/2025	California Wildfires and Winds	4856	Federal Declaration
1/8/2025	California Eaton Fire	5550	Fire Management Assistance Declaration
1/8/2025	California Hurst Fire	5551	Fire Management Assistance Declaration
1/7/2025	California Palisades Fire	5549	Fire Management Assistance Declaration
12/10/2024	California Franklin Fire	5548	Fire Management Assistance Declaration
9/11/2024	California Bridge Fire	5537	Fire Management Assistance Declaration
10/16/2020	California Wildfires	4569	Federal Declaration
9/13/2020	California Bobcat Fire	5374	Fire Management Assistance Declaration

6.2.5 Probability

With several guaranteed wildfires each year, the probability of wildfire ignition in Los Angeles County is gradually increasing, driven largely by climate change. There is a 100% chance of a fire occurring each year within the geographic planning area. Historically, wildfires occurred between June and November, but recent years have shown a year-round fire season due to hotter, drier conditions and more intense weather variability.

Longer dry periods, reduced humidity, and increased temperatures, coupled with historic drought and vegetation die-off, have created critically dry fuel beds. These events make even small ignition sources capable of generating major wildfires.

Santa Ana winds continue to serve as a major accelerant, contributing to rapid fire spread and severe fire behavior. When combined with urban encroachment into fire-prone areas, these conditions elevate both the frequency and destructiveness of wildfires.

Projections from the 2024 THIRA and the LA County Climate Vulnerability Assessment confirm that wildfire probability will continue to rise unless significant fuel reduction, land use planning, and climate adaptation strategies are implemented across all jurisdictions.

The 2024 THIRA estimates that:

- Over 1.2 million residents live in high-risk wildfire zones.
- Communities near the Wildland-Urban Interface (WUI) are at the greatest risk, especially those with limited evacuation routes, and the Access and Functional Needs community.
- Vulnerable populations, including seniors, low-income households, and people with disabilities, face heightened challenges during evacuations.

6.2.6 Vulnerability

Los Angeles County faces high wildfire vulnerability due to its extensive Wildland-Urban Interface (WUI), with over 1.2 million residents that live in Very High Fire Hazard Severity Zones (FHSZs). These communities are particularly susceptible because many homes lack defensible space, fire-resistant construction, or adequate emergency access.

Vulnerable populations including (but not limited to): seniors, individuals with disabilities, low-income households, and those dependent on electrical medical equipment, face significant evacuation and health risks during wildfire events, especially in WUI communities with limited ingress/egress and high fuel loads.

SUPERVISORIAL DISTRICT BREAKDOWN		
Supervisorial District	**Population in High-Risk Wildfire Zones**	**Percentage of District Population**
District 1	**150,000**	**12%**
District 2	**75,000**	**6%**
District 3	**425,000**	**30%**
District 4	**250,000**	**20%**
District 5	**500,000**	**32%**

Contextual Overview

Very High FHSZ in LRA jurisdiction includes dense hillside residential areas under local fire authority responsibility. These are some of the most vulnerable communities due to terrain, vegetation, and constrained emergency access.

Critical infrastructure is also at risk, with wildfire exposure threatening fire stations, law enforcement facilities, hospitals, utilities, transportation corridors, and emergency communication systems. Disruption to these essential services during wildfire events can compound vulnerabilities and delay response and recovery. For a better understanding of critical infrastructure at risk please see Appendix C.

Total Facilities Affected:

- **Very High LRA**: 120
- **High SRA**: 8
- **Very High SRA**: 76

With the continued expansion of developments into fire-prone areas has significantly increased wildfire risk. Many homes in the WUI lack proper defensible space and fire-resistant building materials, making them particularly vulnerable. Additionally, limited evacuation routes in some WUI communities create challenges for emergency response and evacuations. Stricter zoning laws, building regulations, and vegetation management policies are the best practices to reduce risk.

Department/ Agency	Very High FHSZ (LRA)	High FHSZ (SRA)	Very High FHSZ (SRA)
Animal Care and Control	1	0	1
Fire Department	39	1	14
Health Services	1	0	0
Library	7	1	2
LACMA / NHM	1	0	0
Office of Education	3	0	3
Other County Offices	0	0	0
Parks & Recreation	13	1	12
Public Health	52	4	41
Public Works	0	0	0
Sheriff's Department	3	1	3

Wildfires threaten essential infrastructure, including:

- **Transportation**: Damage to roads and bridges affects evacuation and emergency response.
- **Utilities**: Power lines, gas pipelines, and water infrastructure, including dams, are vulnerable to fire damage.
- **Emergency Services**: Public safety and healthcare facilities near wildfire-prone areas face operational disruptions.
- **Public Services**: Parks, libraries, schools, and other public areas could be lost or damaged.

New emerging patterns suggest that climate change may be influencing wildfire risks in Los Angeles County through:

- **Extending fire seasons:** Historically, peak fire season occurred from June to November, but fires are now starting and burning year-round.
- **Increasing fuel dryness:** Higher temperatures and prolonged droughts reduce vegetation moisture levels, making fires more intense.
- **Raising fire frequency:** Hotter, drier conditions contribute to more frequent ignitions, particularly in WUI areas.

Extent of Exposure

- **Total Area Exposed**: 243.72 sq mi
- **Supervisorial Districts (SD) Impacted**:
  - **SD3**: 117.95 sq mi (27.29%)
  - **SD5**: 95.61 sq mi (3.36%)
  - **SD1**: 16.23 sq mi (4.60%)
  - **SD4**: 9.10 sq mi (4.27%)
  - **SD2**: 4.83 sq mi (1.33%)

For a better visual representation of this Wildfire Hazard within the LA County planning area, please reference Appendix A for several Fire Hazard Severity Zone maps.

6.2.7 Impacts

Impacts for past fires vary depending on scope and severity, including the January 2025 fires, including the Palisades and Eaton Fires, resulted in widespread destruction across Los Angeles County, burning over 37,000 acres and destroying more than 16,000 structures combined, with nearly 30 civilian fatalities. These events caused cascading impacts such as prolonged power outages, degraded water pressure affecting firefighting and residential supply, and overwhelmed emergency services. Transportation routes and communications infrastructure were disrupted. Communities, especially in the Wildland-Urban Interface (WUI), experienced major economic losses due to the destruction of homes, businesses, and public facilities. Post-fire hazards like debris flows and landslides further compounded recovery challenges, with water infrastructure contamination and sedimentation requiring emergency remediation. The scope and severity of these fires underscore the increasing vulnerability of critical infrastructure and the urgent need for enhanced mitigation strategies across high-risk zones.

Problem Statement

Many hillside communities within LRA Very High FHSZ zones face critical access and water supply issues during fires. These areas often include aging structures and narrow roads, complicating firefighting and evacuation. Investments in defensible space, local code enforcement, and community wildfire protection planning are vital to saving lives and minimizing losses.

6.2.8 Mitigation and Preparedness

Los Angeles County is implementing a multi-agency approach to mitigate wildfire risks.

Key strategies include:

- **Community Wildfire Protection Plans (CWPPs):** Strengthening fire prevention measures in high-risk areas.
- **Community Preparedness:** Educating residents on wildfire readiness through outreach campaigns, emergency alert systems, and neighborhood preparedness programs.
- **Defensible Space Requirements:** Enforcing brush clearance around structures.
- **Enhanced Building Codes:** Promoting fire-resistant materials for new developments.
- **Vegetation Management:** Reducing fuel loads through prescribed burns and hazardous tree removal.
- **Evacuation Planning:** Improving coordination between OEM, LASD, LACoFD, and other jurisdictions to ensure clear evacuation policies and procedures.

Additional details on the County's proactive and ongoing efforts to reduce wildfire risk, including long-term planning, infrastructure hardening, and community-based initiatives, is located in the dedicated section titled "Mitigation Strategies."

6.2.9 Summary

Wildfires remain one of the most significant hazards in Los Angeles County, posing risks to life, property, and critical infrastructure. The expansion of development into WUI areas, increasing fire severity due to climate change, and ongoing challenges with evacuation and mitigation require proactive, coordinated efforts across agencies. Strengthening fire prevention policies, improving emergency response coordination, and integrating climate adaptation measures are essential to enhancing wildfire resilience for Los Angeles County.



6.3 Earthquake

6.3.1 Nature

Earthquakes occur due to the sudden release of energy in the Earth's crust, generating seismic waves that cause ground shaking. These events, often triggered by movement along fault lines, vary in intensity depending on factors such as magnitude, depth, and proximity to populated areas. In addition to the initial shaking, secondary hazards such as surface faulting, liquefaction, landslides, tsunamis, and aftershocks can worsen the damage. Los Angeles County, located in a highly active seismic region, faces significant risks from these natural events, necessitating extensive mitigation efforts and preparedness planning.

- The most common effects of earthquakes include violent shaking, structural damage, and disruptions to infrastructure.
- Secondary effects can include, but are not limited to, utilities outages, traffic congestion and transportation systems being impassable, and an increase of fire risks, from broken gas and water lines.

EARTHQUAKE KEY POINTS

1. **Nature**
   Earthquakes occur when there is a sudden release of energy from the Earth's crust, creating seismic waves.
2. **Location**
   Los Angeles County is in one of the most highly active seismic regions, having multiple active faults.
3. **Extent**
   The San Andreas Fault remains the greatest threat, with a high chance of an M 6.7+ occurring.
4. **Vulnerability**
   Residents in high-risk seismic zones could be extremely impacted, along with people experiencing homelessness, low income, and the access and functional needs community.
5. **Mitigation and Preparedness**
   Efforts include strengthening building codes, upgrading critical infrastructure, expanding public education, and enhancing emergency response planning.

- Earthquakes occur with little to no warning, making preparedness essential for minimizing loss of life and property.

6.3.2 Location

Los Angeles County is one of the most seismically active regions in the United States, with multiple active fault systems capable of generating destructive earthquakes.

Major faults include:

- San Andreas Fault – Capable of M 8.0+
- Newport-Inglewood Fault – M 7.4
- Malibu Coast Fault System – M 6.7
- San Fernando Fault – M 6.6
- Santa Monica Fault – M 7.0
- Whittier Fault – M 7.2
- Sierra Madre Fault – M 6.0-7.0

For a better visual representation of this Earthquake Hazard within LA County planning area, please reference Appendix A for earthquake fault maps.

6.3.3 Extent

According to US Geological Survey, there are two types of earthquake measurements, magnitude (Mw) and intensity (i). Magnitude is a measure of the energy released at the source of the earthquake. Intensity scale help measure impact on people and structures.

Earthquake impact is based on magnitude scale is as follows:

- Great–Mw > 8,
- Major–Mw = 7.0 – 7.9
- Strong–Mw = 6.0 – 6.9
- Moderate–Mw = 5.0 – 5.9
- Light–Mw = 4.0 – 4.9
- Minor–Mw = 3.0 – 3.9
- Micro–Mw < 3

Modified Mercalli Intensity Scale is from I to XII, which refers I, as not felt and XII as extreme.

Figure 6.3.1 Modified Mercalli Intensity Scale

CIIM Intensity	People's Reaction	Furnishings	Built Environment	Natural Environment
I	Not felt			Changes in level and clarity of well water are occasionally associated with great earthquakes at distances beyond which the earthquakes felt by people.
II	Felt by a few.	Delicately suspended objects may swing.		
III	Felt by several; vibration like passing of truck.	Hanging objects may swing appreciably.		
IV	Felt by many; sensation like heavy body striking building.	Dishes rattle.	Walls creak; window rattle.	
V	Felt by nearly all; frightens a few.	Pictures swing out of place; small objects move; a few objects fall from shelves within the community.	A few instances of cracked plaster and cracked windows with the community.	Trees and bushes shaken noticeably.
VI	Frightens many; people move unsteadily.	Many objects fall from shelves.	A few instances of fallen plaster, broken windows, and damaged chimneys within the community.	Some fall of tree limbs and tops, isolated rockfalls and landslides, and isolated liquefaction.
VII	Frightens most; some lose balance.	Heavy furniture overturned.	Damage negligible in buildings of good design and construction, but considerable in some poorly built or badly designed structures; weak chimneys broken at roof line, fall of unbraced parapets.	Tree damage, rockfalls, landslides, and liquefaction are more severe and widespread wiht increasing intensity.
VIII	Many find it difficult to stand.	Very heavy furniture moves conspicuously.	Damage slight in buildings designed to be earthquake resistant, but severe in some poorly built structures. Widespread fall of chimneys and monuments.	
IX	Some forcibly thrown to the ground.		Damage considerable in some buildings designed to be earthquake resistant; buildings shift off foundations if not bolted to them.	
X			Most ordinary masonry structures collapse; damage moderate to severe in many buildings designed to be earthquake resistant.	

Over 75% of unincorporated Los Angeles County is at risk for severe to extreme shaking in a future earthquake.

The region's dense urban environment, combined with aging infrastructure, increases the likelihood of extensive damage and prolonged recovery times.

Faults running beneath critical infrastructure corridors, including freeways and power grids, pose a significant threat to public safety and economic stability of the planning area.

6.3.4 History

Los Angeles County has a long history of destructive earthquakes, with some of the earliest recorded events dating back to the early 19th century. The San Juan Capistrano Earthquake of 1812 (M 7.5) was among the first to be documented, causing the collapse of Mission San Juan Capistrano and resulting in 40 fatalities. Over the years, the county has experienced numerous significant quakes, including the devastating 1857 Fort Tejon Earthquake (M 7.9), the 1971 San Fernando Earthquake (M 6.6), and the infamous 1994 Northridge Earthquake (M 6.7), which caused billions in damages and led to widespread infrastructure failures. There have been no federal declarations or state proclamations for earthquakes in the last five years.

Major Earthquakes in Los Angeles County (1812 – Present)

Date	Magnitude	Name / Location	Notable Impact
December 8, 1812	7.5	San Juan Capistrano Earthquake	Destroyed Mission San Juan Capistrano, killed 40 people.
December 21, 1812	7.1	West Ventura Earthquake	Caused significant shaking in Southern California.
January 9, 1857	7.9	Fort Tejon Earthquake	Largest earthquake on the San Andreas Fault; ruptured 225 miles.
July 21, 1952	7.5	Kern County Earthquake	Strong shaking felt in Los Angeles; major damage to Bakersfield.
February 9, 1971	6.6	San Fernando Earthquake	65 deaths, $553 million in damages, collapse of Veterans Hospital.
October 1, 1987	5.9	Whittier Narrows Earthquake	8 deaths, 200 injuries, $358 million in damages.
February 28, 1990	5.7	Upland Earthquake	30 injuries, $12.7 million in damages.

June 28, 1991	5.6	Sierra Madre Earthquake	1 death, 100+ injuries, $40 million in damages.
January 17, 1994	6.7	Northridge Earthquake	57 deaths, 8,700 injuries, $40 billion in damages, freeways collapsed.
July 29, 2008	5.5	Chino Hills Earthquake	8 injuries, minor structural damage.
March 28, 2014	5.1	La Habra Earthquake	Few injuries, $10 million in damages.
July 6, 2019	7.1	Ridgecrest Earthquake	Widespread damage in Southern California, infrastructure impacts.

6.3.5 Probability

Trends in Seismic Activity

Over 163 earthquakes of M 5.0 or greater have been recorded in Southern California since 1812.

The San Andreas Fault remains the greatest seismic hazard, with a 59% chance of an M 6.7+ event in the next 30 years.

Future Earthquake Occurrence

The U.S. Geological Survey (USGS) estimates the following probabilities for a major earthquake in Los Angeles County in the next 30 years:

- 60% chance of an M 6.7+ earthquake
- 46% chance of an M 7.0+ earthquake
- 31% chance of an M 7.5+ earthquake

6.3.6 Vulnerability

The county's vulnerability to earthquakes extends beyond physical infrastructure, affecting its residents and essential services. Older buildings, particularly unreinforced masonry and soft-story structures, are at high risk of collapse, posing significant

dangers to residents and businesses. Seismic retrofitting, early warning systems, and stricter building codes have improved resilience, but vulnerabilities remain in older structures and critical infrastructure.

Critical Infrastructure at Risk

- **Highways, bridges, and transportation routes:** A major earthquake could severely disrupt mobility, shipment of goods and services while also delaying emergency response and evacuations. Major highways such as, but not limited to the I-5, I-10, US-101, CA-60, CA-14, I-405, I-710, and I-105 could be impacted.
- **Energy grids and water system:** Disruptions could leave millions without power and clean water.
- **Hospitals and emergency services:** 325 hospitals and 1,299 fire stations in the Los Angeles County could suffer functional impairments.
- **Unreinforced masonry and soft-story buildings:** Many older structures are highly susceptible to collapse during strong ground shaking.

County Specific Critical Facilities Affected:

- Fire Department: 314 facilities (93.18%)
- Public Works: 201 facilities (87.39%)
- Health Services: 56 facilities (85.71%)
- Public Health: 37 facilities (92.50%)
- Libraries: 78 branches (89.66%)
- Parks: 179 (97.79%)
- Education: 70 (85.37%)

Los Angeles County lies at the intersection of multiple major fault lines, including the San Andreas Fault. According to the hazard matrix, the risk of violent ground shaking is prevalent countywide, particularly in urban centers and regions with critical infrastructure. The potential consequences of violent seismic shaking include widespread structural damage, disruption of services, economic losses, and human casualties.

Populations at Risk

- The THIRA estimates over 2 million residents could be significantly impacted in a major seismic event, particularly those in high-risk seismic zones.

- People Experiencing Homelessness (PEH) populations: 75,000+ unhoused individuals in Los Angeles County live in areas at risk of violent shaking.
- Low-income and individuals with access and functional needs (AFN): For more details on impacted population please see Section 5.

Extent of Exposure

- **Total Area Exposed**: 3,041.91 sq mi
- **Supervisorial Districts (SD) Impacted**:
  - **SD5**: 1,950.78 sq mi (69.50%)
  - **SD3**: 379.41 sq mi (87.99%)
  - **SD1**: 349.17 sq mi (98.95%)
  - **SD2**: 362.95 sq mi (99.99%)
  - **SD4**: 210.92 sq mi (99.10%)

6.3.7 Impacts

Los Angeles County has a long history of experiencing damaging earthquakes due to its location along multiple active fault systems, including the San Andreas, Newport-Inglewood, and Whittier faults. Historic earthquakes such as the 1971 San Fernando (M6.6) and 1994 Northridge (M6.7) events caused catastrophic losses. The San Fernando earthquake resulted in 65 deaths, the collapse of hospital structures, and over $550 million in damages, while the Northridge earthquake caused 57 deaths, more than 8,700 injuries, and an estimated $40 billion in economic losses, including widespread infrastructure failures such as collapsed freeways and damaged utility systems.

Impacts from future major seismic events are projected to be even more severe due to population density, aging infrastructure, and increasing development in seismically vulnerable areas. Over 75% of unincorporated Los Angeles County is at risk of severe to extreme ground shaking. Current estimates suggest that a large-magnitude earthquake could displace up to 2.2 million people, injure or kill thousands, and result in over $200 billion in combined economic losses, including $113 billion in property damage and $68 billion in business interruptions.

The County's critical systems; power, water, transportation, healthcare, and communications, are especially vulnerable. A major earthquake could impair up to 325 hospitals and 1,299 fire stations and disrupt critical infrastructure for millions. Populations with heightened vulnerability include the 75,000+ people experiencing homelessness, those with access and functional needs, and residents of older, unreinforced masonry and soft-story structures.

Without sufficient mitigation, a future earthquake could result in cascading failures across multiple sectors and prolong the County's recovery for years. These risks highlight the urgency for continued investment in seismic retrofitting, stricter enforcement of building codes, expanding statewide early warning systems, and equitable preparedness programs targeting at-risk vulnerable populations.

- **Casualties and injuries:** Depending on the time of day and location, thousands could be injured or killed in a severe earthquake.
- **Economic disruption:** A significant earthquake could halt business operations, damage supply chains, and force thousands into unemployment.
- **Housing displacement:** An estimated 2.2 million residents could be displaced, with tens of thousands requiring emergency sheltering.

Economic Impact

A major earthquake in Los Angeles County could result in over $200 billion in economic losses, with a total of $118 trillion-dollar exposure. Losses can include:

- $68 billion in business interruptions
- $51 billion in lost economic activity
- $113 billion in property damages

Problem Statement

The pervasive exposure of Los Angeles County to violent earthquake shaking presents a systemic threat to public safety, economic stability, and essential services. Nearly all major departments and infrastructure elements are located within high-shaking hazard zones. The extensive reach across all five Supervisorial Districts (SD) amplifies the challenge, highlighting the urgent need for retrofitting, public education, preparedness programs, and resilient design policies. Failure to address this hazard could lead to catastrophic loss of life and functionality in the event of a major seismic event.

6.3.8 Mitigation and Preparedness

Efforts to reduce earthquake risks in Los Angeles County include strengthening building codes, enhancing emergency preparedness, and retrofitting vulnerable structures.

Key efforts to mitigate earthquake risks include:

- Strengthening building codes and enforcing retrofitting laws
- Upgrading critical infrastructure
- Expanding public education and early warning systems
- Enhancing emergency response planning

By proactively implementing these measures, Los Angeles County aims to reduce casualties, infrastructure damage, and economic losses in future seismic events.

Seismic Retrofitting Programs

- **Soft story retrofit program**: Mandates seismic upgrades for older apartment buildings.
- **Non-ductile concrete building retrofits**: Strengthens older commercial and residential structures.
- **Hospitals and emergency facilities retrofitting**: Ensures critical services remain operational post-earthquake.

Policy and Regulatory Measures

- Assembly Bill (AB) 1857: Strengthens building standards for multi-story structures.
- AB 2681: Requires cities and counties to inventory vulnerable buildings.
- Updated California Building Code (CBC): Enforces stricter seismic design criteria for new construction.
- Public Education: Teaching to Drop, Cover and Hold On; the household preparedness checklist, educate residents on emergency response, retrofitting, and disaster preparedness.
- Early Warning/ ShakeAlert System: Provides real-time earthquake early warnings to residents via mobile alerts and public messaging.
- Public earthquake drills: Annual Great California ShakeOut encourages preparedness.

6.3.9 Summary

Los Angeles County remains at high risk for devastating earthquakes, with scientific projections indicating a strong likelihood of a significant seismic event in the coming decades. The region has experienced numerous historic earthquakes, and the potential for future large-scale disasters remains ever-present. While advances in engineering, emergency preparedness, and mitigation efforts have improved resilience, challenges persist, particularly regarding aging infrastructure and vulnerable communities. Continued investments in retrofitting, public education, and early warning systems will be critical in minimizing casualties, economic losses, and recovery challenges in future earthquakes.



6.4 Extreme Heat

6.4.1 Nature

Extreme heat refers to prolonged periods of high temperatures, often accompanied by high humidity, posing significant health risks such as heat exhaustion and heat stroke. The urban heat island (UHI) effect, prevalent in densely built areas like Los Angeles County, intensifies these conditions by absorbing and retaining heat. The changing climate conditions through time in the region exacerbate for the rising of daily temperature and for the increasing of extreme heat days in the County. This leads to health issues, increase energy demand, and strain on infrastructure.

EXTREME HEAT KEY POINTS

1. **Nature**
   Prolonged periods of high temperatures pose significant health risks such as heat exhaustion and heat stroke. Urban heat island (UHI) is rampant in Los Angeles County.
2. **Location**
   Los Angeles County is vulnerable to extreme heat because of its diverse landscape and urban density.
3. **Extent**
   Predictions show a significant rise in frequency and intensity of heat waves, with inland areas being more susceptible.
4. **Vulnerability**
   Populations most vulnerable to extreme heat are elderly individuals, low-income communities, outdoor workers, people experiencing homelessness, and the access and functional needs community.
5. **Mitigation and Preparedness**
   To manage extreme heat, Los Angeles County has implemented cooling centers, urban greening initiatives, public awareness campaigns, and building codes and regulations.

6.4.2 Location

Los Angeles County is particularly susceptible to extreme heat due to its diverse geography and urban density. All of Los Angeles County may experience extreme heat, nonetheless inland regions, including the valleys and high desert areas experience

higher temperatures compared to coastal areas. The urban heat island (UHI) effect can increase temperatures in cities and developed areas than the less developed areas. Urban centers with extensive concrete and asphalt surfaces further amplify heat retention, contributing to elevated temperatures and increased UHI effect in the county.

6.4.3 Extent

The severity of heat events in Los Angeles County has been increasing. Projections indicate a significant rise in the frequency and intensity of heat waves, with inland areas potentially experiencing temperatures exceeding 110°F. The urban heat island effect can cause urban areas to be several degrees warmer than their rural counterparts, exacerbating the impact of heat waves. The chart below shows the levels of heat wave impacts used to measure heatwave severity. HeatRisk, an experimental measure developed by the NWS in collaboration with the CDC, classifies heat events by their impact on human health. It ranges from Green (0) which is little or no risk to Magenta (4), which means extreme heat with no overnight relief.

Category	**Figure 6.4.1 Risk of Heat-Related Impacts**
Green 0	Little to no risk from expected heat.
Yellow 1	Minor - This level of heat affects primarily those individuals extremely sensitive to heat, especially when outdoors without effective cooling and/or adequate hydration.
Orange 2	Moderate - This level of heat affects most individuals sensitive to heat, especially those without effective cooling and/or adequate hydration. Impacts possible in some health systems and in heat-sensitive industries.
Red 3	Major - This level of heat affects anyone without effective cooling and/or adequate hydration. Impacts likely in some health systems, heat-sensitive industries and infrastructure.
Magenta 4	Extreme - This level of rare and/or long-duration extreme heat with little to no overnight relief affects anyone without effective cooling and/or adequate hydration. Impacts likely in most health systems, heat-sensitive industries and infrastructure.

National Weather Service (NWS), 2024

August, being the hottest month of the year that the planning area experiences the Figure 6.4.2 below shows, the average high temperature for August 2024 in Los Angeles County. As shown, the temperature varies by location but remains higher than average monthly temperature.

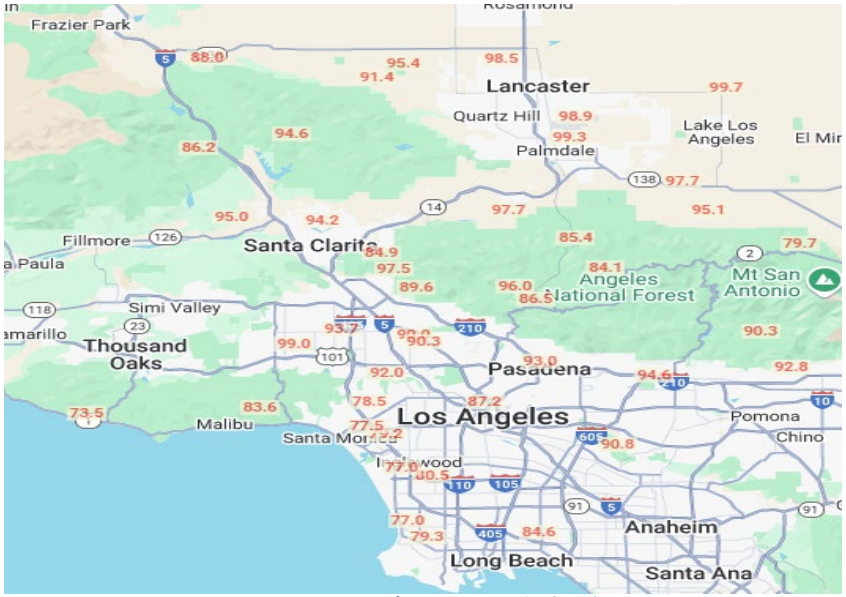


Figure 6.4.2, Mean Max Temperature for August 2024, National Weather Service

6.4.4 History

Because of the changing climate conditions and the geographical location, Los Angeles County has been experiencing extreme heat waves in the past years. It has a history of extreme heat events, with temperatures frequently reaching 100 degrees or more, especially during the summer months. In some cases, these extreme heat events are record-breaking heat waves surpassing their all-time highs.

Extreme Heat events include:

- **August 2020:** A severe heatwave led to widespread power outages, affecting nearly 500,000 residents.

- **September 2020:** The San Fernando Valley recorded a record high temperature of 121°F.
- **August 2022:** A record-breaking heatwave in late summer exceeded 100°F
- **September 2024:** A severe September heatwave pushed temperatures 10-20°F above normal, hitting 109°F in Long Beach

The History of Extreme heat events highlight the increasing trend of extreme heat occurrences in the region. There have been no federal declarations or state proclamations for extreme heat in the last five years. Even though there were no declared extreme heat emergencies, the county has issued several heat alerts and taken measures to protect residents from the impacts of heat waves during these periods.

6.4.5 Probability

Extreme heat events are an annual occurrence in Los Angeles County, though severity of such events vary per year based on other conditions, such as El Niño. Climate models project a substantial increase in the likelihood of extreme heat events in Los Angeles County. By mid-century, the county could experience more than five major heat waves annually, with some models suggesting up to tenfold increases in frequency. This heightened probability necessitates proactive mitigation and adaptation strategies.

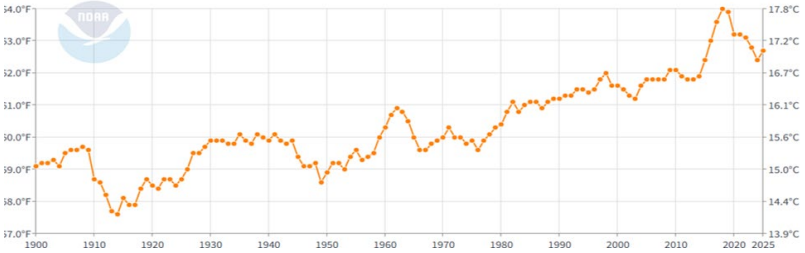


Figure 6.4.3, Average Temperature 1900-2025, NOAA, NCEI, 2025.

6.4.6 Vulnerability

Extreme heat poses a significant and growing threat to Los Angeles County, where rising temperatures, urban heat islands, and widespread social vulnerability intersect. Those most at risk include the elderly, low-income households lacking air conditioning,

people experiencing homelessness (PEH), individuals with access and functional needs (AFN), and the County's large population of outdoor and non-air-conditioned indoor workers. Infrastructure is also strained; electricity demand spikes during heatwaves, often overwhelming the power grid and triggering outages. Water systems experience increased demand and evaporation losses, while roadways and rail lines are subject to buckling or operational delays. In recent years, Los Angeles County has experienced severe consequences from prolonged heat events, reinforcing the urgent need for heat resilience strategies targeting both people and critical services.

Los Angeles County-Specific Impacts and Data

- 491,600 residents experienced power outages during the August 2020 heatwave.
- 96% of the County's 1,000 miles of high-voltage transmission lines are exposed to moderate to high extreme heat risk.
- 1.7 million residents are considered highly vulnerable due to age, income, disability, or chronic health conditions.
- Over 300,000 outdoor workers are at elevated risk for heat-related illness and injury.
- Thousands of heat-related emergency visits occurred during multi-day heat events in 2020 and 2022; especially in neighborhoods with limited shade and high surface temperatures.
- 50+ cooling centers have been activated across the County during recent heatwaves to support at-risk populations.
- High heat contributes to worsened air quality, increased wildfire smoke exposure, and economic losses due to infrastructure damage, productivity decline, and rising healthcare costs.

6.4.7 Impacts

Los Angeles County has faced significant and growing impacts from extreme heatwaves over the past two decades. In August 2020, a prolonged heatwave caused rolling blackouts affecting nearly 500,000 customers, overwhelmed the state's electrical grid, and forced the activation of emergency conservation protocols. That same summer, the San Fernando Valley hit 121°F, leading to widespread strain on

HVAC systems and increased emergency room visits for heat-related illnesses. The 2022 and 2024 heatwaves brought similar conditions—temperatures over 100°F across the region led to localized transformer failures, asphalt buckling, and strain on water delivery systems due to elevated demand. During these events, outdoor workers, the elderly, and low-income residents without access to cooling systems were among the most affected. Economic activity was disrupted, with reports of business closures, service delays, and increased healthcare costs. In 2024, Long Beach reached a record 109°F, causing a spike in electricity demand and triggering emergency energy alerts across Southern California. Heat-related deaths and hospitalizations have also trended upward, particularly in neighborhoods with low tree canopy and high impervious surfaces. These impacts underscore the need for resilient infrastructure and targeted adaptation strategies to safeguard health and essential services.

6.4.8 Mitigation and Preparedness

The most effective way to reduce the negative impacts of an extreme heat event is to develop a comprehensive heat response plan that has individual strategies to effectively manage heat waves during peak seasons of the year. The plan might include forecasting and monitoring, education and awareness, and heat wave response.

To address extreme heat, Los Angeles County has implemented several measures:

- **Cooling Centers:** Establishment of air-conditioned public spaces where residents can seek relief during heatwaves. These centers are facilities such as libraries, community centers, and senior centers. Residents can locate the nearest cooling center using resources provided by the county. *Additional resources can be found at https://ready.lacounty.gov/heat/*
- **Urban Greening Initiatives:** Programs aimed at increasing green spaces, planting trees, and creating parks to provide shade and reduce ambient temperatures. These efforts help mitigate the urban heat island effect.
- **Public Awareness Campaigns:** Educational initiatives to inform residents about heat risks, prevention strategies, and resources available during extreme heat events. These campaigns emphasize the importance of hydration, recognizing heat-related illness symptoms, and utilizing cooling centers.
- **Building Codes and Regulations:** Incorporation of heat-mitigating designs and materials in new constructions and retrofits, such as cool roofs and reflective

pavements, to reduce heat absorption. These measures aim to lower indoor temperatures and decrease reliance on air conditioning.

These strategies are designed to reduce heat exposure, protect vulnerable populations, and enhance community resilience against extreme heat events.

6.4.9 Summary

Extreme heat poses a growing threat to Los Angeles County, with increasing frequency and intensity of heat waves exacerbated by urban heat island (UHI) effects. Understanding these impacts of extreme heat and taking appropriate precautions, residents of Los Angeles County can protect themselves and their communities from this growing climate hazard. The county has undertaken various mitigation efforts, including the establishment of cooling centers, urban greening projects, public education campaigns, and the implementation of heat-conscious building practices. Ongoing adaptation and proactive planning are essential to safeguard public health, infrastructure, and the environment from the adverse effects of extreme heat.



6.5 Drought

6.5.1 Nature

Drought is a prolonged period of below-average precipitation that leads to water shortages, impacting agriculture, ecosystems, and urban water supplies. Unlike other natural disasters, drought develops gradually, making it difficult to predict and mitigate. In Los Angeles County, droughts are a recurring issue due to the region's arid climate and dependence on imported water supplies.

Drought severity is determined by its duration, intensity, geographic extent, and water demand. Climate change is exacerbating these factors, leading to hotter temperatures, reduced precipitation, and increased evaporation rates. Wildfires are also projected to increase in frequency and intensity during drought season.

DROUGHT KEY POINTS

1. **Nature**
   Drought is a slow-developing hazard worsened by climate change, leading to hotter, drier conditions and water shortages.
2. **Location**
   L.A. County's drought risk is high due to its arid climate and dependence on imported water sources.
3. **Extent**
   Droughts are classified into five levels; L.A. experienced drought conditions for 376 straight weeks from 2011–2019.
4. **Vulnerability**
   All residents are affected by dought, especially vulnerable groups, face risks from water shortages, wildfires, and health impacts.
5. **Mitigation and Preparedness**
   The County is expanding recycling, stormwater capture, and conservation programs to improve drought resilience.

There are four common classifications of drought:

- **Meteorological Drought**: A prolonged period of below-normal precipitation.

- **Hydrological Drought**: A reduction in surface and groundwater levels due to prolonged precipitation deficits.
- **Agricultural Drought:** A lack of soil moisture that affects crop growth and livestock sustainability.
- **Socioeconomic Drought:** When water shortages impact drinking water supplies, sanitation, public services, and economic activities.

6.5.2 Location

Drought is regional in nature and typically affects the entire Los Angeles County planning area. Given the county's reliance on imported water from the Sierra Nevada snowpack and the Colorado River, reduced availability of these sources significantly increases vulnerability.

6.5.3 Extent

Drought is a recurring natural hazard that can severely impact agriculture, water supply, ecosystems, and communities. To monitor and communicate drought conditions across the United States, the National Drought Mitigation Center (NDMC), in partnership with the U.S. Department of Agriculture (USDA) and the National Oceanic and Atmospheric Administration (NOAA), produces weekly U.S. Drought Monitor maps. These maps categorize drought conditions into five levels based on intensity, duration, and impact on various sectors, including agriculture, water resources, and public health.

Each drought category reflects a different level of severity, from short-term dry conditions that may slow crop growth, to long-term, widespread water shortages that require emergency response. These classifications help decision-makers, farmers, and water managers respond appropriately to emerging or ongoing drought conditions. See Figure 6.5.1 below for more information.

Drought Categories and Associated Impacts:

CATEGORY	DESCRIPTION	POSSIBLE IMPACTS
D4	EXCEPTIONAL DROUGHT	• Exceptional and widespread crop/pasture losses • Critical shortages of water in reservoirs, streams, and wells • Water emergencies and possible mandatory rationing • Severe impacts on ecosystems and wildlife habitats
D3	EXTREME DROUGHT	• Major agricultural losses and pasture failure • Widespread water shortages • Water use restrictions likely enforced • Increased risk of wildfires and heat-related stress
D2	SEVERE DROUGHT	• Crop and pasture losses becoming likely • Water shortages becoming common • Local governments may implement water restrictions • Hydropower generation and irrigation potentially impacted
D1	MODERATE DROUGHT	• Noticeable damage to crops and pastures • Water levels in streams and reservoirs begin to decline • Voluntary water-use restrictions may be requested • Some stress on fish and wildlife populations
D0	ABNORMALLY DRY	• Early signs of drought, with short-term dryness slowing planting and crop growth • If improving lingering water deficits as area recovers from drought • Pastures or vegetation may show signs of delayed recovery

Figure 6.5.1 Drought Categories and Associated Impacts

These classifications not only help guide resources and planning but also raise awareness about the broader consequences of prolonged dryness. Understanding the extent and severity of drought helps ensure timely response and mitigation efforts at local, state, and federal levels.

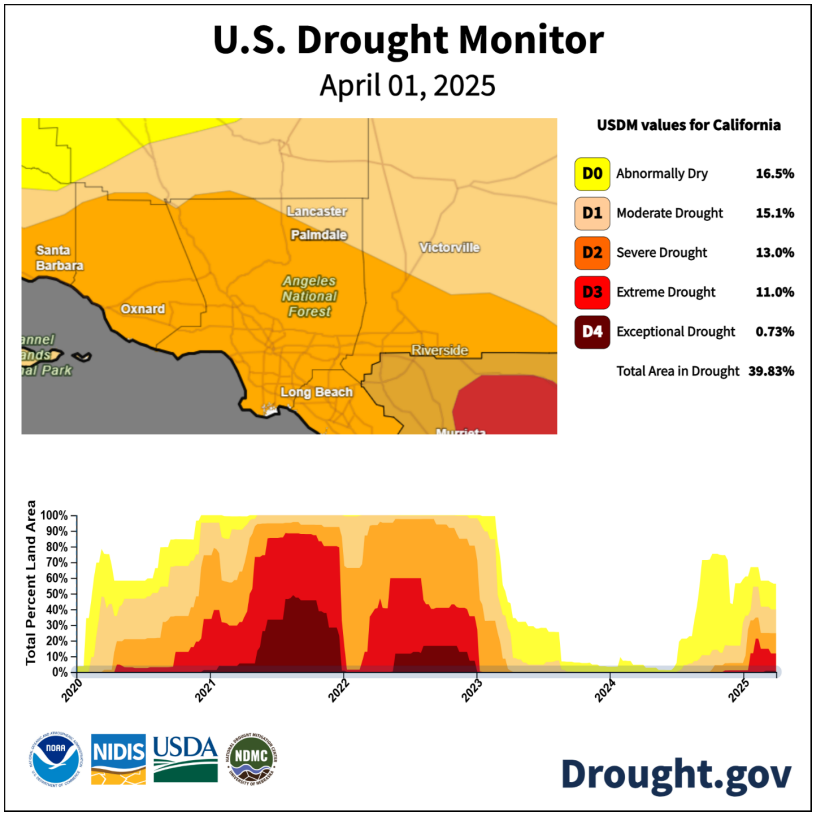


Figure 6.5.2, U.S. Drought Monitor, 2025

6.5.4 History

Los Angeles County has experienced multiple significant droughts, with some lasting several years. There have been no federal declarations or state proclamations for drought in the last five years.

Notable historical drought periods include:

1. 1917-1921 – A widespread drought affecting most of California.
2. 1976-1977 – One of the driest two-year periods in recorded history.
3. 1987-1992 – A six-year drought that severely impacted water supplies and agriculture.
4. 2007-2009 – A prolonged drought leading to state-imposed water restrictions.
5. 2011-2017 – The most severe drought in modern history, resulting in groundwater depletion and mandatory conservation measures.
6. 2020-2022 – California experienced a significant drought, with Los Angeles County experiencing "abnormally dry" conditions.
7. 2024-2025 – Los Angeles County is continuing to experience abnormally dry conditions, with lower average rainfalls and arid conditions.

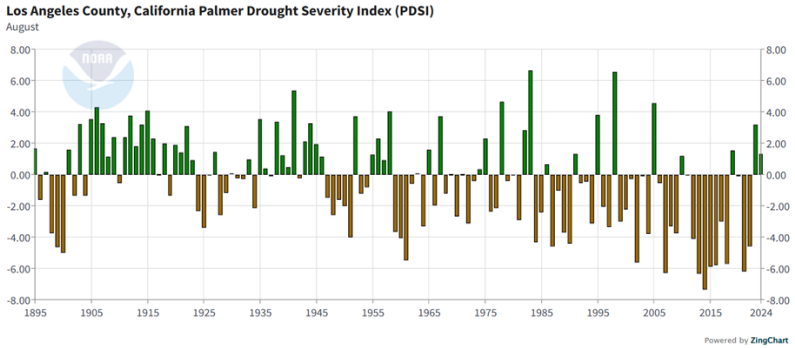


Figure 6.5.3, NOAA Drought Severity Index, 2024

The chart above, the Palmer Drought Severity Index, shows how drought conditions have been changing since 1895. The Palmer Drought Severity Index measures how dry or wet an area is by comparing rainfall and temperature to long-term averages. It gives a number (positive or negative) showing drought severity or excess moisture.

Los Angeles County was in some form of drought for 376 consecutive weeks from December 20, 2011, until March 14, 2019. The State and the County passed several resolutions and regulations at different times to mitigate drought impacts like water

conservation regulations. There were no federally declared drought disasters in the area in the past five years in the planning area.

6.5.5 Probability

Climate scientists predict that Los Angeles County and the rest of Southern California will get drier, while Northern California will get hotter. Rising temperatures contribute to higher evaporation rates and declining snowpack in the Sierra Nevada, a critical source of water for Southern California. The frequency of extreme droughts is expected to increase, reducing available water resources and heightening competition between urban, agricultural, and environmental needs. Long-term droughts have a 100% of occurring every ten-years, with potential for longer and more destructive drought events due to climate change.

6.5.6 Vulnerability

Los Angeles County's 10 million residents face growing vulnerabilities during prolonged droughts, with over 75% of community water systems exhibiting at least one drought-related risk, such as reliance on a single source or aging infrastructure. The County's dependence on imported water—serving over 60% of residents—increases exposure to supply disruptions from reduced Sierra Nevada snowpack and Colorado River allocations. All residents, and visitors of Los Angeles County are affected by water shortages during a prolonged drought conditions.

Vulnerabilities include:

- **Low-income households**, often lacking water-efficient appliances and cooling systems.
- **Agricultural industry** with over 140,000 acres of irrigated farmland in the County is at risk of reduced water allocation and drying pastures for livestock.
- **Wildland-urban interface (WUI) communities**, where over 1 million residents face heightened wildfire risk due to dry vegetation and limited firefighting water supply.
- **Critical infrastructure** operations may be impacted by a range of factors from reduced hydropower availability when reservoir levels decrease to power station cooling challenges.

These vulnerabilities illustrate the far-reaching, cross-sector impacts of drought on the County's economy, environment, and most at-risk communities.

6.5.7 Impacts

Over the past five years, Los Angeles County has experienced intensifying drought conditions marked by rising temperatures, reduced snowpack, and persistent water shortages. By 2022, 75% of the County's community water systems showed at least one drought vulnerability, including reliance on a single water source or aging infrastructure. Public health impacts have also emerged, with 1,113 cases of Valley fever reported in 2020, linked to dry soil and dust exposure. Hydropower reductions during drought periods increased reliance on natural gas, contributing to elevated energy costs for residents. These compounding impacts have strained water supply, health systems, and infrastructure, reinforcing drought as a major and growing hazard for Los Angeles County.

6.5.8 Mitigation and Preparedness

To combat increasing drought risks, Los Angeles County has implemented water conservation policies, infrastructure investments, and emergency response measures. Key strategies include:

Water Management and Conservation

- Expanding water recycling and desalination programs to reduce reliance on imported water.
- Implementing drought-tolerant landscaping initiatives to lower residential and commercial water use.
- Enforcing water efficiency regulations for new developments and upgrading older properties with water-saving strategies.

Infrastructure Improvements

- Enhancing groundwater recharge projects to increase local water storage.
- Upgrading stormwater capture systems to maximize water retention during rainy seasons.
- Developing new water storage facilities to provide additional supply resilience.

Community Preparedness and Public Awareness

- Launching county-wide conservation campaigns to encourage sustainable water use.
- Increasing financial incentives for water-efficient appliances and irrigation systems.
- Strengthening emergency drought response plans to ensure equitable water distribution during crises.

6.5.9 Summary

Drought remains a persistent and growing threat to Los Angeles County's water security and economic stability. Climate change projections indicate more frequent and severe droughts, placing greater strain on water supply systems, public health, and agriculture. By implementing proactive water management strategies, investing in infrastructure resilience, and promoting community awareness, the County can mitigate the long-term impacts of drought and ensure sustainable water resources for future generations.



6.6 Flooding

6.6.1 Nature

Flooding is a persistent and increasingly severe hazard in Los Angeles County, driven by heavy rainfall, storm surge, stormwater drainage, and rising sea levels. The county's complex hydrology, which includes rivers, creeks, and an extensive urban flood control system, is highly susceptible to overflow events when precipitation exceeds drainage capacity. The effects of climate change are exacerbating flood risks by intensifying storms, altering precipitation patterns, and increasing sea levels, leading to greater coastal inundation and inland flash floods.

Unlike other regions that experience seasonal flooding due to snowmelt, flooding in Los Angeles County primarily occurs during winter storms and atmospheric river events, which bring intense rainfall and lightning over short periods.

FLOODING KEY POINTS

1. **Nature**
   Flooding in Los Angeles County is driven by heavy rainfall, storm surge, stormwater drainage, and rising sea levels.
2. **Location**
   Areas at risk of flooding include communities near rivers, foothills, valleys, coastlines, and recent burn scars.
3. **Extent**
   Approximately 243.32 square miles of Los Angeles County are in a 500-year floodplain.
4. **Vulnerability**
   Residents within floodplains or people experiencing homelessness living near rivers are especially vulnerable to floods.
5. **Mitigation and Preparedness**
   Actions focus on floodplain land use regulations, stormwater management and drainage, and maintaining flood control measures.

- The region's high degree of urbanization contributes to flash flooding, as paved surfaces prevent natural absorption of water, leading to rapid runoff and street flooding.

- Burn scars from recent wildfires further compound flood risks by reducing vegetation cover, destabilizing hillsides, and increasing the likelihood of land movement.

Flooding also creates secondary hazards, including erosion, infrastructure damage, water contamination, and transportation disruptions. Stormwater runoff can overwhelm wastewater treatment facilities, leading to hazardous spills. Landslides and mudflows in post-wildfire areas pose additional risks to homes, roads, and critical infrastructure. These compounding threats highlight the urgent need for comprehensive flood mitigation efforts to protect communities, infrastructure, and the environment.

6.6.2 Location

Flood hazards are geographically widespread, with more than 240 square miles of land located within the 100- and 500-year floodplains. Historically significant events, such as the 1938 and 1969 floods, as well as more recent storms in 2023 and 2024, have caused substantial damage to infrastructure, triggered evacuations, and challenged long-term recovery efforts. Socially vulnerable populations, including older adults, individuals with access and functional needs, and low-income households, face disproportionate impacts due to limited financial resources, inadequate insurance coverage, and reduced access to services. The County's flood control system includes concrete river channels, levees, storm drains, debris basins and reservoirs; has helped mitigate some flood risks but remains vulnerable to high-intensity storms that exceed design capacities.

Major Flood-Prone Areas:

- Los Angeles River, San Gabriel River, and Santa Clara River: These major waterways are prone to overflow during extreme storm events, particularly during El Niño years.
- Ballona Creek and Malibu Creek: These urban watersheds experience rapid runoff and flash flooding, especially in developed areas.
- Foothills, Valleys, and Recent Burn Scar Areas: Post-wildfire regions face heightened risk of flash floods and debris flows following storms.
- Antelope Valley: In desert regions, stormwater pools into temporary lakes, causing flooded roadways and infrastructure damage.

- Coastal Communities: Rising sea levels and storm surges threaten beachfront properties, harbors, and businesses.

Urban areas are particularly vulnerable due to impervious surfaces and outdated drainage systems. During intense storms, neighborhoods in Downtown Los Angeles, South LA, and the San Fernando Valley frequently experience street flooding and traffic disruptions, demonstrating the limitations of existing infrastructure in handling modern storm events.

For a better visual representation of this Flooding Hazard within the LA County planning area, please reference Appendix A for flood and inundation maps.

6.6.3 Extent

Los Angeles County faces a significant and evolving flood risk, with impacts ranging from localized urban inundation to widespread riverine flooding and destructive debris flows. Although the County has invested heavily in flood control infrastructure; including an extensive network of dams and debris basins; these systems are increasingly strained and cannot fully eliminate the threat. A growing number of residents are exposed to dangerous flooding each year, a situation made worse by the limitations of aging infrastructure and the complexities of urban hydrology. Intense rainfall events, especially those associated with atmospheric rivers, are occurring more frequently and with greater severity, often overwhelming drainage systems and resulting in severe flooding of streets and neighborhoods. Compounding this risk are burn scars from recent wildfires, which heighten the likelihood of mudslides and debris flows that threaten both life and property. As climate patterns shift and extreme weather events become more common, the flood vulnerability of Los Angeles County continues to deepen across its diverse geography.

Flood severity is typically measured using the 100-year and 500-year flood recurrence intervals, which indicate a 1% and 0.2% annual probability of flooding, respectively. These designations guide floodplain management and mitigation efforts.

Key Flood Hazard Statistics in Los Angeles County:

- 243.32 square miles (5.11%) of land have a 0.2% annual flood probability.
- 4.19 square miles (0.09%) have a 1% annual flood probability.

Key Flood Hazard Statistics for Unincorporated Los Angeles County:

- 64.77 square miles (2.13%) have a 0.2% flood probability.
- 1.23 square miles (0.04%) have a 1% flood probability.

As climate change accelerates sea-level rise and extreme rainfall events, these flood-prone areas may expand, affecting more residents, infrastructure, and businesses.

FLOOD IMPACT ON LAND AREA		
Area	**0.2% Annual Flood Probability**	**1% Annual Flood Probability**
Los Angeles County	243.32 sq. mi. (5.11%)	4.19 sq. mi. (0.09%)
Unincorporated LA County	64.77 sq. mi. (2.13%)	1.23 sq. mi. (0.04%)

6.6.4 History

Los Angeles County has experienced numerous severe flood events, many of which have caused catastrophic damage to infrastructure, property, and human life. Over the decades, climate variability, rapid urbanization, and an aging flood control system have led to repeated flooding disasters. There have been no federal declarations or state proclamations for earthquakes in the last five years.

Below are some of the most significant historical and recent flood events affecting the region.

Notable Flood and Lightning Events in Los Angeles County:

- **1938 Los Angeles Floods**: One of the deadliest floods in county history, caused by weeks of torrential rainfall, resulting in over 100 deaths, the destruction of thousands of homes, and widespread infrastructure damage, particularly to bridges and roadways.
- **1969 Winter Storms**: Heavy rains led to massive debris flows in the San Gabriel Mountains, severe urban flooding across Los Angeles, and multiple dam breaches, prompting major evacuations.
- **1992-1993 El Niño Floods**: A series of storms triggered landslides, flash flooding, and major coastal erosion, with significant damage to Pacific Coast Highway and residential areas.
- **2017 Winter Storms (DR-4305)**: Record-breaking rainfall led to significant urban flooding, road closures, and mudslides, with severe impacts across multiple communities.

- **October 2021**: Los Angeles County experienced a rare and intense thunderstorm with a significant amount of lightning.
- **September 2022 Hurricane Kay**: A pacific hurricane that caused significant rainfall along with risk of mudflows, coastal flooding, and coastal erosion.
- **January 2023 Atmospheric River Event (DR-4683)**: Heavy rainfall overwhelmed storm drains, causing significant flooding in Hollywood, Baldwin Hills, and low-lying inland areas, leading to evacuations and infrastructure damage.
- **February 2023 Los Angeles Floods (DR-4699)**: A series of intense storms caused widespread flash flooding, freeway closures, and landslides, demonstrating the increasing vulnerability of the county's urban areas to extreme precipitation events.
- **August 2023 Tropical Storm Hilary (DR-4750)**: Several locations in the mountains of Southern California received over 10 inches of rainfall which set daily and/or monthly rainfall records, in many locations in Southern California, including within Los Angeles County. It also created significant threat of flash and riverine flooding prompted the evacuation of numerous vulnerable communities near burn scars in the region.
- **December 2023 Pacific Storm**: Storm surges and extreme coastal flooding led to significant erosion along the coastline, particularly impacting Marina del Rey, Long Beach, and Venice Beach.
- **February - March 2024 Atmospheric River Storm (DR-4769)**: One of the most intense rainfall events in recent history, resulting in severe flash floods, mudslides, and power outages, with many homes and businesses sustaining flood damage.

6.6.5 Probability

Flood recurrence in Los Angeles County is influenced by both natural climate variability and the increasing effects of climate change. Historically, severe flooding is most likely during strong El Niño events, which occur approximately every 2 to 7 years and can persist for several months to multiple years. These events bring elevated precipitation levels and increase the likelihood of both inland and coastal flooding.

As climate change accelerates, the frequency and intensity of flood-generating events are expected to increase, altering traditional recurrence intervals and expanding the areas at risk. There is a 95% chance of a flooding event occurring each year withing Los Angeles County.

Key climate-related drivers include:

- **Sea-Level Rise**: Projected to rise by 6 inches to over 2 feet by 2050, increasing the risk of tidal and storm surge flooding in coastal communities.
- **Atmospheric River Events**: According to the 2024 THIRA, these events are becoming more frequent and intense, leading to elevated flash flood and debris flow risks.
- **El Niño Cycles**: Still expected every 2 to 7 years, but with increased variability and storm intensity that can overwhelm local drainage and flood control systems.

These evolving conditions challenge existing floodplain maps and design assumptions, highlighting the need for adaptive planning, updated risk models, and continued investment in resilient infrastructure and flood mitigation strategies.

6.6.6 Vulnerability

Los Angeles County faces widespread and layered vulnerabilities to flooding, shaped by a combination of environmental exposure and complex social factors. Physical vulnerability is pronounced in areas located within FEMA-designated Special Flood Hazard Areas (SFHAs), post-wildfire burn scars, and low-lying urban drainage basins that are prone to flooding. However, the degree of risk is significantly heightened for certain populations who may lack the resources or capacity to prepare for, respond to, and recover from flood events. Socially vulnerable groups, including older adults, individuals with disabilities or access and functional needs (AFN), mobile home residents, people experiencing homelessness, and low-income households; are more likely to reside in structurally vulnerable housing.

According to the 2021 Los Angeles County Comprehensive Floodplain Management Plan, more than a quarter of residents living within the 100-year floodplain earn less than $20,000 annually, underscoring the disproportionate economic burden faced by those least able to absorb the costs of recovery. Climate vulnerability data further demonstrates that marginalized communities in flood-exposed areas face elevated risks due to flooding events. The vulnerability landscape is further complicated by a shortage of affordable flood-resilient structures, and an increasing number of residents living in areas newly exposed due to climate-driven changes in precipitation and runoff patterns.

6.6.7 Impacts

Flooding in Los Angeles County leads to a broad range of direct and cascading impacts on people, infrastructure, environment, and the economy. The County's extensive network of critical facilities, including hospitals, fire stations, wastewater treatment plants, schools, and power substations. These areas face recurring exposure within both 100- and 500-year floodplains. Damage to these facilities not only compromises their physical integrity but also threatens their functionality during emergency response operations.

Flooding often disrupts lifeline services such as electricity, potable water, sanitation, and transportation, with rural and unincorporated areas facing the greatest challenges to rapid restoration. Mobile homes, frequently concentrated in low-lying or under-drained neighborhoods, are especially susceptible to flood damage due to construction limitations and inadequate protective measures. Previous flood events have resulted in significant debris flows, road closures, train stoppages, and damage to public and private structures.

Primary Vulnerabilities & Impacts:

- Over 1,470 structures are estimated to be damaged in a 100-year flood event, with total damages exceeding $769.7 million in property losses in unincorporated Los Angeles County.
- Additionally, more than 180 critical facilities are exposed in the 500-year floodplain, while 70 are within the 100-year floodplain, including transportation assets, utilities, emergency services, and hazardous materials facilities.
- A 100-year flood event could displace over a thousand people with many requiring sheltering, support and recovery efforts.
- Approximately 19,563 tons of building-related debris could be generated by a 100-year flood event, with clean-up requiring more than 780 truckloads, posing logistical, environmental, and public health challenges.
- 28.6% of households in the 100-year floodplain are economically disadvantaged, earning under $20,000 per year, limiting their ability to evacuate, recover, or pay for mitigation improvements.
- A large share of flood-prone properties are either uninsured or underinsured. The average flood insurance claim payout is $7,298, which is only about 1% of the 2019

average replacement cost of structures in the floodplain—indicating significant gaps in financial resilience.

- Wildfire burn scars and post-fire hydrophobic soils significantly increase flood and debris flow risks, particularly in foothill and canyon communities. This hazard continues to grow in severity with climate-driven fire seasons.

Estimated Damage to Critical Facilities in Unincorporated Areas from 100-Year Flood

Sector	Number of Facilities Affected	Average % of Total Value Damaged	
		Structure	Content
Safety & Security	1	7.56	10.24
Food, Water & Sheltering	9	6.72	18.73
Health & Medical	0	N/A	N/A
Energy	1	23.90	47.79
Communications	0	N/A	N/A
Transportation	59	1.41	8.86
Hazardous Materials	0	N/A	N/A
Total/Average	**70**	**9.90**	**21.40**

Estimated Damage to Critical Facilities in Unincorporated Areas from 500-Year Flood

Sector	Number of Facilities Affected	Average % of Total Value Damaged	
		Structure	Content
Safety & Security	4	28.39	37.56
Food, Water & Sheltering	41	7.73	27.01
Health & Medical	0	N/A	N/A
Energy	1	23.90	47.79
Communications	2	5.00	16.00
Transportation	107	3.38	19.74
Hazardous Materials	30	10.00	15.00
Total/Average	**185**	**13.07**	**27.18**

Charts Source: LA County Public Works; 2021 County Comprehensive Flood Plan

6.6.8 Mitigation and Preparedness

Los Angeles County's flood mitigation strategy reduces hazard exposure, enhances community resilience, and supports long-term climate adaptation. Grounded in FEMA's National Mitigation Framework, CalOES planning guidance, and local policy, the County implements both structural and non-structural measures to address current and future flood risks. Core actions include regular maintenance and targeted upgrades to

stormwater infrastructure, restoration of floodplains, and integration of flood hazard data into land use planning. The County also prioritizes the protection of critical facilities and vulnerable housing through site retrofits, property acquisition, and elevation programs. Public outreach is conducted through a bilingual, ADA-accessible Program for Public Information, which promotes flood safety awareness, emergency preparedness, and participation in the National Flood Insurance Program (NFIP).

To ensure that mitigation is both data-driven and community-centered, the County utilizes climate projections and FEMA's HAZUS modeling to inform investments, while coordinating with regional partners to align local actions with broader watershed strategies. Key components of the approach include:

- Upgrading culverts, debris basins, and drainage systems to manage increased runoff
- Promoting low-impact development (LID) and incorporating green infrastructure in urban design
- Updating ordinances and the General Plan to discourage development in high-risk areas
- Maintaining inventories of repetitive loss areas and prioritizing resources for the most vulnerable populations

This comprehensive strategy ensures Los Angeles County not only meets federal and state standards but advances flood risk reduction in a way that safeguards people, property, and natural systems for the future.

6.6.9 Summary

Flooding is one of the most persistent and complex natural hazards in Los Angeles County, intensified by climate change, urbanization, and aging infrastructure. The Los Angeles County region experiences a range of flood types, including stormwater runoff, flash flooding, coastal inundation, and post-wildfire debris flows. These events are most common during winter storms and atmospheric river systems. High-density development, extensive paved surfaces, and fire-damaged hillsides contribute to rapid runoff and increased overall flood vulnerability. Areas along (but not limited to) the Los Angeles, San Gabriel, and Santa Clara Rivers, as well as coastal communities and foothill regions, are particularly at risk.

Los Angeles County's mitigation strategy is proactive and multifaceted. It includes infrastructure upgrades, nature-based solutions, land use policy updates, and public education. Core priorities focus on protecting critical facilities, reducing exposure in high-risk housing, and promoting community resilience. Planning efforts are supported by FEMA's HAZUS risk modeling and local climate projections. Despite progress, more than 750,000 residents remain at risk from major flood events, reinforcing the need for continued investment in comprehensive, flood risk reduction across the county.

6.6.10 National Flood Insurance Program (NFIP) Repetitive Loss (RL)

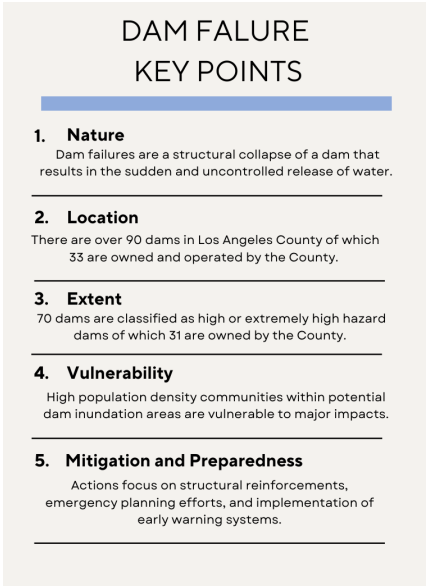
According to the Los Angeles County Public Works, there are 55 Repetitive Loss (RL) properties in 28 RL areas of Unincorporated Los Angeles County as of 2025, and 8 Severe Repetitive Loss Properties (SRLP). A Repetitive Loss (RL) property is any insurable building for which two or more claims of more than $1,000 were paid by the National Flood Insurance Program (NFIP) in any rolling 10-year period since 1978. Updated location information about RL properties in Unincorporated Los Angeles County were not available during the drafting of this plan, but is being finalized and will be included in subsequent hazard mitigation efforts. Data from 2011 showed that 24 RL properties were located in the SFHA. At the time, the Los Angeles County Public Works stated, "the majority of the repetitive losses are associated with localized urban drainage flood problems, even for properties within a FEMA-designated flood zone." The Los Angeles County Public Works oversees RL mitigation projects.



6.7 Dam Failure

6.7.1 Nature

Dam failure refers to the structural collapse of a dam that results in the sudden and uncontrolled release of stored water. Such failures can occur due to age-related deterioration, inadequate spillway capacity, structural damage from seismic activity or flooding, and poor maintenance. The catastrophic release of water from a dam failure has the potential to cause human casualties, significant economic loss, and environmental destruction. This type of disaster is particularly dangerous because it can occur suddenly, leaving little time for evacuation or emergency response efforts.



The magnitude of flooding from dam failure often exceeds the capacity of downstream channels, causing rapid inundation of surrounding areas. This flooding can lead to extensive property damage, erosion, infrastructure destruction, and contamination of water supplies. Additionally, secondary hazards such as landslides and debris flows can be triggered, compounding the disaster's impact. The structural stress on dams may rise as dams age, and climate variability increases the frequency of extreme precipitation events. Planning efforts include both dams and debris basins. To simplify language of the plan both reservoir dams and storm water debris basins will be referred to as dams.

6.7.2 Location

Los Angeles County has over 90 dams regulated by the California Department of Water Resources' Division of Safety of Dams (DSOD). Fifteen (15) of these dams and eighteen (18) debris basins are owned and operated by the Los Angeles County Public Works (PW). In 2017, the California Legislature mandated that all state-jurisdictional dams (excluding those classified as Low Hazard) develop dam breach inundation maps and Emergency Action Plans (EAPs) approved by DSOD and Cal OES.

Many of these dams are located near highly populated areas, increasing the potential for human and economic impacts during a failure event. Seventy (70) dams are classified as High or Extremely High hazard potential dams, meaning their failure could result in significant loss of life and widespread property damage.

The Whittier Narrows Dam, reclassified as the U.S. Army Corps of Engineers' (USACE) highest-priority dam safety concern, poses one of the greatest risks due to its potential to flood highly populated areas from Pico Rivera to Long Beach. USACE has determined that an extreme storm event has a 1 in 900 (0.1%) chance of causing catastrophic failure annually. Mitigation actions related to County-owned dams are prioritized based on their hazard level and potential to impact populated areas.

For a better visual representation of this Dam Failure Hazard within the LA County planning area, please reference Appendix A for all the County owned dams and debris basins maps.

6.7.3 Extent

The Federal Guidelines for Inundation Mapping of Flood Risks Associated with Dam Incidents and Failures (FEMA P-946, 2013) categorizes dam hazards into four classifications:

- **Low Hazard**: Minimal damage expected, no loss of life.
- **Significant Hazard**: Potential for property damage and economic disruption.
- **High Hazard**: Likely to result in loss of life and significant damage to critical infrastructure.
- **Extremely High Hazard (DSOD Classification)**: Could cause large-scale fatalities and inundate areas with over 1,000 residents.

Given the population density of Los Angeles County, a dam failure classified as High or Extremely High Hazard would likely cause substantial human casualties, displace entire communities, and inflict severe economic and environmental damage. Table 6-3 and 6-4 below shows a list of dams and debris basins owned by PW along with their hazard classifications. Potential mitigation actions described in this AHMP are only applicable to the dams and debris basins owned by PW and implementation of these actions are the responsibility of the PW Stormwater Engineering Division – Dams Section.

Table 6-3: Los Angeles County PW Dam Hazard Status

Dam Name	Hazard Status	Location
Big Dalton	Extremely High	Glendora, CA
Big Santa Anita	Extremely High	Monrovia, CA
Big Tujunga No. 1	Extremely High	Tujunga, CA
Cogswell	Extremely High	Azusa, CA
Devils Gate	Extremely High	LA Canada Flintridge, CA
Live Oak	Extremely High	La Verne, CA
Morris	Extremely High	Azusa, CA
Pacoima	Extremely High	Pacoima, CA
Puddingstone	Extremely High	San Dimas, CA
Puddingstone Diversion	High	La Verne, CA
San Dimas	Extremely High	La Verne, CA
San Gabriel No. 1	Extremely High	Azusa, CA
Sawpit	Extremely High	Monrovia, CA
Sierra Madre	High	Sierra Madre, CA
Thompson Creek	Extremely High	Claremont, CA

Table 6-4: Los Angeles County PW Debris Basin Hazard Status

Debris Basin Name	Hazard Status	Location
Bailey Debris Basin	High	Sierra Madre, CA
Big Dalton Debris Basin	High	Glendora, CA
Blanchard Debris Basin	High	Tujunga, CA
Brand Debris Basin	High	Glendale, CA
Eaton Wash Debris Basin	Extremely High	Pasadena, CA
La Tuna Debris Basin	Extremely High	Sun Valley, CA
Laguna Regulating Basin	Significant	Alhambra, CA
Little Dalton Debris Basin	Extremely High	Glendora, CA
Lower Sunset Debris Basin	High	Burbank, CA
Morgan Debris Basin	High	Glendora, CA
Rubio Debris Basin	High	Altadena, CA
Santa Anita Debris Basin	Low	Arcadia, CA
Sawpit Debris Basin	Extremely High	Monrovia, CA

Debris Basin Name	Hazard Status	Location
Schoolhouse Debris Basin	High	Los Angeles, CA
Sierra Madre Villa	Extremely High	Sierra Madre, CA
Stevenson Ranch	High	Stevenson Ranch, CA
Stough Debris Basin	Extremely High	Burbank, CA
Wilson Debris Basin	High	Los Angeles, CA

6.7.4 History

Los Angeles County has experienced one of the deadliest dam failures in U.S. history:

- St. Francis Dam Failure (March 12-13, 1928):
  - Released 12.4 billion gallons of water
  - At least 411 fatalities
  - Devastated towns from San Francisquito Canyon to Ventura County
  - Resulted in sweeping changes to California dam safety regulations and the creation of state oversight for civil engineers

While no major dam failures have occurred in recent decades, concerns over aging dam infrastructure, seismic risks, and increasing climate variability have raised alarms about future risks. Studies indicate that many California dams, including those in Los Angeles County, require structural updates to withstand modern hydrological conditions and potential seismic activity. There have been no federal declarations or state proclamations for dam failure in the last five years.

6.7.5 Dam Coordination

Los Angeles County Public Works coordinates with local, state, and federal agencies to mitigate flood risk hazards to downstream communities from its dams. At the local level, PW works with cities and public agencies during development of Emergency Action Plans (EAP). This provides local stakeholders with the opportunity to review the EAP, provide feedback, and confirm responsibilities and roles during an EAP activation. At request from local jurisdictions, PW may provide tours of its dam facilities, where information on dam safety and the potential hazards associated with dam failures are shared.

At the state level, PW works with the DSOD to meet compliance with state dam safety standards and flood management at all of PW's dams. This includes annual dam

inspections, review, approval, and oversight of dam construction projects, review of dam safety monitoring, and oversight of other dam safety regulatory activities. PW also coordinates with various state agencies, including DSOD, Cal OES, and Caltrans during development of EAPs.

At the federal level, PW works with the Federal Energy Regulatory Commission (FERC) to meet compliance with state dam federal standards and flood management at PW's San Gabriel Dam, which is under FERC jurisdiction. This includes annual dam inspections, review, approval, and oversight of dam construction projects, review of dam safety monitoring, EAP coordination, and oversight of other dam safety regulatory activities. PW also coordinates with the United States Army Corps of Engineers (USACE) on operations of interconnected dam facilities and emergency response planning for USACE facilities that may be in the pathway of dam failure impacts.

Information Sharing

PW provides critical information to relevant local, state, and federal stakeholders to address hazard mitigation related to dam safety. This includes:

- **Emergency Action Plans (EAPs):** EAPs outline the roles, responsibilities, and procedures to follow in the event of a dam emergency. The EAPs include inundation maps, which show areas that would be affected by a dam failure, helping to identify populations at risk. These plans are shared with stakeholders to ensure a coordinated response. Due to the sensitive nature of information contained within the EAPs, they are confidential and not released to the general public.
- **Inundation Maps:** Inundation maps are critical tools for identifying areas and populations at risk in the event of a dam failure. They also indicate potential impacts on critical infrastructure facilities such as hospitals, schools, and transportation networks. These maps are shared with relevant stakeholders recognized in the EAP and are available to the general public through the DSOD Dam Breach Inundation Map Web Publisher.

6.7.6 Probability

Los Angeles County contains over 90 state-jurisdictional dams, with approximately 70 classified as High or Extremely High Hazard by the California Division of Safety of Dams (DSOD), meaning their failure could result in loss of life and significant property damage.

Although comprehensive failure probabilities are not published for each dam, FEMA and DSOD guidance suggest that the general annual probability of failure for High Hazard dams nationwide ranges from 0.01% to 0.1% (or 1 in 10,000 to 1 in 1,000) depending on maintenance, age, seismic vulnerability, and other site-specific factors.

Applying this range to Los Angeles County:

- The aggregate annual probability of a significant dam failure event in the county—across one or more of the 70 high-risk dams—is estimated at between 0.1% and 0.5% annually, factoring cumulative exposure and different hazard classifications. (Such as earthquake or flood related)
- Climate change, aging infrastructure, and seismic activity in Los Angeles County increase systemic risk across multiple structures simultaneously.

In summary, while the individual likelihood of failure for any one dam is very low, the overall countywide probability of at least one major dam failure event is low but still warrants continued vigilance, maintenance, and emergency planning.

6.7.7 Vulnerability

A catastrophic dam failure in Los Angeles County could have severe consequences for hundreds of thousands of residents. The densely populated nature of the county, combined with the location of several large dams near residential and commercial areas, increases the potential for widespread displacement, loss of life, and economic damage. The 2024 THIRA identifies multiple high-risk zones where dam failure could result in extensive flooding and mass evacuations.

- High-risk dams, among others, pose a significant threat to densely populated communities. A breach in any of these dams could inundate entire neighborhoods, affecting more than 500,000 residents in low-lying areas and floodplains.
- Socially vulnerable populations, including elderly individuals, the AFN community, people experiencing homelessness, low-income communities, and non-English-speaking residents face heightened risks during evacuations and recovery due to limited mobility, financial constraints, and access to resources.
- Educational and healthcare institutions are at risk, with several schools, hospitals, and long-term care facilities located in flood-prone areas. A major dam failure could result in school closures, displacement of students, and disruption of healthcare services.

- Evacuation and emergency sheltering demands would be substantial, requiring the rapid mobilization of resources to support displaced residents. Temporary shelters, emergency medical services, and logistical support would need to be activated to accommodate evacuees.

Los Angeles County relies heavily on dams and reservoirs for water storage, flood control, and supply regulation. Catastrophic dam failure poses an acute threat to life and property, especially in low-lying, highly populated downstream areas.

Extent of Exposure

- **Total Area Exposed**: 490.64 sq mi
- **Supervisorial Districts (SD) Impacted**:
  - **SD5**: 223.88 sq mi (7.97%)
  - **SD1**: 162.25 sq mi (45.98%)
  - **SD2**: 66.57 sq mi (18.32%)
  - **SD3**: 25.76 sq mi (5.97%)
  - **SD4**: 12.17 sq mi (5.72%)
- **Critical Facilities Affected**:
  - Fire Department: 112 (33.22%)
  - Public Works: 92 (40.00%)
  - Health Services: 29 (44.62%)
  - Public Health: 17 (42.50%)
  - Libraries: 30 (34.48%)
  - Parks: 65 (35.50%)
  - Education: 34 (41.46%)

Problem Statement

Dam failure, while rare, can have catastrophic consequences in densely populated downstream areas. With significant portions of critical infrastructure exposed—particularly in SD1 and SD5—planning for emergency evacuations, early warning systems, infrastructure hardening, and downstream development regulation is critical to saving lives and reducing loss.

A failure or breach of a High Hazard Potential Dam (HHPD) in Los Angeles County would result in catastrophic consequences for downstream communities, with the greatest vulnerabilities concentrated in densely populated urban areas. Rapid and massive flooding would likely inundate residential neighborhoods, commercial districts, and industrial zones within minutes to hours, depending on proximity and topography. Critical infrastructure—including hospitals, fire and police stations, schools, and major transportation corridors—would be severely impacted, disrupting emergency services and evacuation routes. Thousands of people, including vulnerable populations such as those with Access and Functional Needs (AFN), elderly residents, and low-income households, would face immediate life-threatening conditions, displacement, and limited access to medical care or shelter. Economic losses would be compounded by damage to utilities, including power substations and water systems, potentially leaving large swaths of the region without essential services. The sheer scale of devastation from a dam failure, especially at facilities such as Whittier Narrows or Castaic Dam, underscores the critical importance of continued risk reduction, early warning systems, and dam rehabilitation efforts.

6.7.8 Data Limitations

A limitation of this AHMP is that planning efforts only covered PW-owned dams in Los Angeles County. Future mitigation planning should include other dam owners and operators in Los Angeles County such as the US Army Corps of Engineers. The data on high-hazard dams reviewed during the 2025 AHMP planning process was generally suitable for the analysis required. Future opportunities for obtaining additional data to be considered in the next update to the plan should:

- Incorporate more current information as it becomes available.
- Assess any new or updated EAPs for dams owned by Los Angeles County.
- Identify and review more current structural or condition assessment data to inform future risk assessments.
- Involve other dam owners within Los Angeles County in future planning efforts.

6.7.9 Impacts

A dam failure in Los Angeles County would have catastrophic and immediate consequences for life, property, and critical infrastructure, particularly in the densely populated downstream areas. The sudden release of impounded water from a High or Extremely High Hazard dam could inundate neighborhoods within minutes, allowing little to no time for evacuation. More than 500,000 residents live within identified dam inundation zones, many of whom are in socially vulnerable populations—including

individuals with limited mobility, low-income households, and people experiencing homelessness–making rapid evacuation and sheltering especially challenging. County-owned high hazard potential dams and their locations are listed in Table 6-3. Inundation maps for County-owned high hazard potential dams are listed in Appendix A-7.

Critical infrastructure is also at significant risk. Hospitals, fire stations, law enforcement facilities, emergency operations centers, schools, and wastewater treatment plants located in downstream zones may be damaged or rendered inoperable, severely disrupting emergency response and life-sustaining services. Major transportation routes such as interstates, rail lines, and arterial roads could be submerged or washed out, impeding rescue and recovery efforts. Additionally, power substations, water distribution networks, and telecommunications infrastructure could suffer cascading failures, contributing to widespread outages and prolonged recovery periods.

The economic consequences of dam failure would be immense. Beyond property damage, business operations in inundated areas would halt, leading to loss of employment, tax revenue, and economic activity. Industrial zones (especially those near major flood control reservoirs or channels) could potentially release hazardous materials if overwhelmed, posing secondary environmental and public health hazards. Debris accumulation, sedimentation, and contamination could severely impact ecosystems, water quality, and flood control infrastructure downstream, complicating both emergency cleanup and long-term environmental recovery.

Given the scale of potential impacts, dam failure is considered a stable low-probability but high-consequence hazard in Los Angeles County, requiring continued investment in structural mitigation, emergency preparedness, and public awareness to reduce the severity of its effects.

6.7.10 High Hazard Potential Dams Goals

Goal 1: Enhance resilience across dam/debris basin infrastructure, including high-hazard potential dams, and other critical facilities within dam inundation zones.

Goal 2: Encourage structural reinforcement or retrofits for aging and vulnerable dams.

Goal 3: Ensure all dams/ debris basins have updated Emergency Action Plans (where applicable) and updated dam inundation mapping consistent with state standards.

6.7.11 Mitigation and Preparedness

Los Angeles County and state agencies have implemented various mitigation efforts to reduce the risks associated with dam failures:

- **Structural Reinforcements:** Upgrading spillways, strengthening earthen dams, and implementing seismic retrofitting measures.
- **Emergency Action Plans (EAPs):** Mandated by DSOD for all High and Extremely High hazard dams to guide evacuation and response efforts.
- **Early Warning Systems:** Improved flood monitoring and automated alert systems to notify at-risk communities in real-time.

6.7.12 High Hazard Potential Dam Prioritization

The risk assessment within the 2025 AHMP considers the county planning area's vulnerability and potential impacts related to HHPDs. Mitigation actions and planning efforts that are related to mitigating long-term vulnerabilities to County-owned HHPDs will automatically be given a HIGH priority as described in the overall mitigation action prioritization criteria in Section 7.6. The County Departments responsible for implementing the associated mitigation actions, along with the priority, potential funding source, and expected time frame are listed in Section 7.8.

6.7.13 Summary

Los Angeles County has 90 state-jurisdictional dams, with 70 classified as High or Extremely High hazard, meaning their failure could result in widespread loss of life and economic devastation. While regulatory oversight has improved dam safety, aging infrastructure, seismic threats, and increased storm intensity remain challenges. Continued investment in retrofits, early warning systems, and emergency planning is essential to mitigating the risk of catastrophic dam failures.



6.8 Land Movement

6.8.1 Nature

Land movement refers to the downward movement of rock, soil, or debris along a slope due to gravity. This process can occur suddenly or gradually over time, depending on contributing factors such as soil composition, slope stability, and external triggers. Land movement encompass a variety of movement types including mudflows, rockfalls, debris flows, land slumps, land subsidence, and soil movement. In Los Angeles County, the diverse topography and geological formations make certain areas more prone to land movement, particularly during periods of intense precipitation, seismic activity, or human land-use modifications.

LAND MOVEMENT KEY POINTS

1. **Nature**
   Land movement is the downward movement of rock, soil, or debris due to gravity.
2. **Location**
   Hillside, canyon, and coastal bluff communities along with areas near recent burn scars are at particular risk.
3. **Extent**
   Approximately 750 square miles (15.75%) of Los Angeles County are within high-risk landslide zones.
4. **Vulnerability**
   Approximately 1.2 million residents in Los Angeles County could be affected by land movement.
5. **Mitigation and Preparedness**
   Actions focus on regulating land use and strengthening infrastructure resilience.

Climate change exacerbates land movement by increasing the frequency and intensity of extreme weather events, such as heavy rainfall and flooding, which can lead to accelerated erosion and heightened landslide risks.

Land movement often occur in conjunction with other natural hazards, exacerbating their impact. Some of the primary contributing factors include:

- **Seismic Activity**: Earthquakes can destabilize slopes, leading to land movement and rockfalls. The force of seismic shaking can cause sudden failures, particularly in areas with pre-existing instability.
- **Heavy Rainfall and Flooding**: The likelihood of land movement increases after successive storms. Prolonged or intense rainfall saturates soil, reducing its cohesion and triggering slope failures.
- **Coastal Erosion**: Waves and storm surge erode coastal cliffs, leading to instability and eventual collapse, particularly in areas such as County beaches and coastal communities, many of which have previously experienced significant erosion.
- **Wildfires**: Loss of vegetation due to fires reduces the soil's ability to retain moisture, making slopes more susceptible to erosion and land movement during subsequent rain events.
- **Burn Scars**: Wildfire burn scars significantly elevate the risk of land movement by stripping the land of stabilizing vegetation. Areas affected by major fires such as the Woolsey Fire (2018), Bobcat Fire (2020), Bridge Fire (2024), Eaton Fire (2025), and Palisades Fire (2025) have shown increased susceptibility to land movement due to reduced soil stability and rapid runoff during rainstorms.

6.8.2 Location

Los Angeles County is home to multiple regions susceptible to land movement due to steep slopes, unstable geology, and weather patterns. The California Geological Survey (CGS) Landslide Susceptibility Map highlights high-risk areas. For a better visual representation of the Land Movement Hazard within the LA County planning area, please reference Appendix A for maps that show areas that are susceptible to land movement and recent burn scars.

Potential land movement areas include (but are not limited to):

- Santa Monica Mountains
- San Gabriel Mountains
- Sierra Pelona Mountains
- Baldwin Hills
- Puente Hills
- Palos Verdes Hills

These areas are particularly vulnerable due to their steep terrains, weak rock formations, and history of slope movement. Additionally, human activities such as grading, excavation, and construction in these regions can further destabilize the ground, increasing the likelihood of land movement. Areas impacted by past wildfires, known as burn scars, are also highly susceptible to land movement, as the loss of vegetation reduces soil stability and increases erosion risks during heavy rains. This is particularly concerning in wildfire-prone areas such as the Santa Monica Mountains and the foothills of the San Gabriel Mountains, where post-fire land movement have historically caused significant damage.

6.8.3 Extent

The extent of land movement in Los Angeles is significant and varied, influenced by its unique geological setting. According to the 2011 CGS Landslide Susceptibility Map, approximately 750 square miles (15.75%) of Los Angeles County fall within high-risk landslide zones. The highest concentrations of deep-seated landslide susceptibility are distributed as follows:

Table 6-5 Landslide Susceptibility Map

Area	High-Risk Landslide Zones (sq. miles)	Percentage of Total Land Area
Los Angeles County	750.02	15.75%
Unincorporated Areas	577.63	18.99%
Supervisorial District 1	17.29	7.02%
Supervisorial District 2	2.73	1.68%
Supervisorial District 3	114.61	26.58%
Supervisorial District 4	105.12	23.89%
Supervisorial District 5	509.31	18.14%

6.8.4 History

Land movement have historically caused significant damage in Los Angeles County, often resulting in property destruction, infrastructure damage, and road closures. There have been no federal declarations or state proclamations for dam failure in the last five years. Some of the most notable events include:

- **1956 – Portuguese Bend Landslide**: A massive landslide on the Palos Verdes Peninsula began in 1956 and remains active today. The movement of land has displaced homes and infrastructure, highlighting the region's ongoing geologic instability.
- **1994 – Northridge Earthquake-Induced Land movement**: The earthquake triggered more than 11,000 moving events, primarily in the Santa Susana Mountains and San Gabriel Mountains, causing extensive road and structural damage.
- **March 1995 – Pacific Palisades Landslide**: Heavy rains weakened the coastal bluffs, leading to a 300-foot-wide collapse that buried part of the Pacific Coast Highway under 30 feet of debris.
- **March 2005 – Sunset Mesa Landslide**: A slope failure near Malibu caused over 20,000 cubic yards of debris to block roadways and damage property.
- **July 2023 – Peartree Lane Land Movement (Rolling Hills Estates)**: A sudden slope failure resulted in the displacement of 12 homes, which were red-tagged due to structural instability.
- **September 2024 – Accelerated Land Movement in Rancho Palos Verdes**: A significant increase in land movement, with certain areas shifting up to four inches per week toward the ocean, threatening roads and over 250 residential properties.

6.8.5 Types of Land Movement

Debris Flow/ Mudflow/ Soil Movement

Debris flow involves the rapid movement of a dense mixture of water, soil, rock, and organic material down a slope. This process can have significant impacts on landscapes, ecosystems, and human infrastructure.

Debris flows are characterized by their fluid-like behavior and ability to transport large objects, such as boulders and trees. They can travel at high speeds making them highly destructive. The composition of a debris flow can vary, but it typically includes:

- **Water**: A crucial component that facilitates movement.
- **Soil and Rock**: These provide the bulk of the material in a debris flow.
- **Organic Material**: Includes vegetation and other natural debris that get caught in the flow.

Mudflows are rapid movements of water-saturated earth materials that can cause significant damage to both natural environments and human settlements. Mudflows are characterized by their fluid-like motion, which occurs when soil, rocks, and debris become saturated with water. This saturation reduces the friction between particles, allowing the mass to move downhill under the influence of gravity. Key characteristics include:

- **Speed and Volume:** Mud flows can travel at speeds up to 35 miles per hour and can carry large volumes of material, including rocks, trees, and even vehicles.
- **Consistency:** The consistency of a mud flow can vary from a thick, viscous slurry to a watery flow. This depends on the proportion of water to solid materials.
- **Path:** Mud flows typically follow existing drainage patterns, such as river channels and valleys, but can also carve new paths, leading to unpredictable and widespread damage.

Soil movement is a natural process that significantly impacts the environment and human activities. It involves the displacement of soil particles due to various natural and human caused factors. Key characteristics include:

- **Landslides:** Often occurring in hilly areas, landslides involve the downward movement of rock and soil. They can be sudden and fast-moving, making them particularly dangerous.
- **Soil Creep:** This is a slow and gradual movement of soil down a slope, often unnoticed until significant damage occurs.
- **Soil Liquefaction:** During an earthquake, saturated soil can temporarily lose its strength and behave like a liquid, causing structures to sink or tilt.

Causes

In Los Angeles County, several factors contribute to the occurrence of debris flows/mudflows/ soil movement:

- **Heavy Rainfall and Storm Events:** Intense and prolonged rainfall, often associated with storms, can saturate the soil, reducing its stability and triggering debris flows.

The region's Mediterranean climate, with wet winters and dry summers, creates conditions conducive to such events.

- **Wildfires:** Los Angeles County frequently experiences wildfires, which can burn and destabilize vegetation that normally helps hold soil in place. The loss of vegetation increases the risk of soil erosion and, consequently, debris flows during subsequent rainfalls.
- **Steep Terrain:** The county's mountainous terrain, including areas like County mountainous areas, is particularly prone to debris flow. The steep slopes facilitate the rapid movement of debris downhill.
- **Soil Composition:** Certain soil types, such as clay-rich soils, can become highly unstable when saturated with water, making them more susceptible to debris flow.
- **Human Activity:** Urban development, road construction, and deforestation can alter natural landscapes and exacerbate conditions that lead to debris flow.
- **Seismic Activity:** Los Angeles County is situated in a highly active seismic zone, making it prone to earthquakes. Seismic activity can lead to soil liquefaction, landslides, and ground shaking, all contributing to soil displacement.

Land Subsidence

Land subsidence is a gradual settling or sudden sinking of the Earth's surface due to various natural and human-induced factors. This hazard can have significant impacts on the environment, infrastructure, and communities.

A reduction in land elevation is one of the most noticeable features of land subsidence, leading to significant changes in the landscape. This phenomenon can occur due to natural processes, such as the dissolution of limestone, as well as human activities like the excessive extraction of groundwater, oil, or natural gas. Furthermore, land subsidence increases the risk of flooding because the lower elevation can lead to poor drainage and water accumulation. As the ground sinks, it often results in the formation of depressions, fissures, and sinkholes, which can dramatically alter the geography and infrastructure of the area.

- **Depressions:** Are sunken or low-lying areas on the Earth’s surface, often formed by natural or man-made processes.
- **Fissures:** Are a long, narrow crack or linear opening in the Earth’s crust.
- **Sinkholes:** Are holes in the ground causes by the collapse or sinking of surface material into an underlying void.

Causes

- **Groundwater Extraction:** One of the primary causes of land subsidence in Los Angeles County is the excessive extraction of groundwater. As water is pumped out of underground aquifers, the ground above can sink or settle, leading to subsidence.
- **Oil and Gas Extraction:** The removal of oil and natural gas from beneath the earth's surface also contributes to land subsidence. This extraction can create voids and reduce pressure in subterranean layers, causing the ground to sink.
- **Natural Soil Compaction:** Over time, natural processes such as soil compaction can lead to gradual subsidence. In areas with loose or unconsolidated soils, the weight of overlying materials compacts the ground, resulting in a lowering of the land surface.

Rock Falls

Rock falls are a natural geological phenomenon where rock fragments break free from a steep slope or cliff and tumble downward. These events can range from small pebbles dislodging to massive boulders crashing down with significant force and impact.

Rock falls are characterized by:

- **Speed and Suddenness:** Rock falls occur quickly and without much warning, making them particularly dangerous.
- **Varied Sizes:** The size of the falling material can range from small pebbles to large boulders, impacting the severity of the event.
- **Path Predictability:** While the initial trigger point is often identifiable, the path of descent can be unpredictable due to varying terrain and obstacles.

Causes

The primary causes of rock falls include:

- **Weathering and Erosion:** Over time, weathering processes such as freeze-thaw cycles, chemical weathering, and the action of water can weaken rock structures. Erosion can undermine the base of slopes, making rocks more susceptible to falling.
- **Seismic Activity:** Los Angeles County is located in a seismically active region. Earthquakes can dislodge rocks from cliffs and steep slopes, triggering rock falls.

- **Heavy Rainfall:** Intense or prolonged rainfall can saturate the ground, increasing the weight and pressure on rock faces. This saturation can lead to the loosening and collapse of rocks.
- **Human Activity:** Construction, mining, and other human activities can destabilize rock formations. The vibrations from heavy machinery and blasting can initiate rock falls.

6.8.6 Probability

Landslides and other land movement events happen in Los Angeles County fairly often, especially after heavy rain or in areas that recently had wildfires or are prone to sliding.

- Small landslides (like debris flows) are most likely during years with heavy rain, especially El Niño years. These happen every 2 to 7 years; there is 14% to 50% chance each year during those cycles.
- In high-risk zones (like steep mountain slopes with a history of movement), probability is 1–2% chance per year, especially following multi-year wet periods or major wildfires.
- Some areas of the County have been experiencing continuous sliding.

6.8.7 Vulnerability

Land movement pose risks to life, property, and essential infrastructure. The 2024 THIRA projects that approximately 1.2 million residents in Los Angeles County could be directly or indirectly affected by land movement. The most at-risk populations include:

- Residents of hillside and canyon communities such as Malibu, Topanga, and the Palos Verdes Peninsula.
- Homeowners in coastal bluff areas that are facing erosion-driven slope failures.
- Communities in wildfire burn scar areas, where the loss of vegetation increases landslide probability during heavy rains.
- The Access and Functional Needs (AFN) community who may face challenges in evacuating or leaving landslide-prone areas.

Contextual Overview

Los Angeles County's diverse topography includes many hillside communities susceptible to deep-seated landslides, especially after wildfire or heavy rain. These hazards can isolate communities, damage property, and disrupt lifelines.

Extent of Exposure

- **Total Area Exposed**: 284.57 sq mi
- **Supervisorial Districts (SD) Impacted**:
  - **SD5**: 151.96 sq mi (5.41%)
  - **SD3**: 90.23 sq mi (20.93%)
  - **SD4**: 25.94 sq mi (12.20%)
  - **SD1**: 13.77 sq mi (3.90%)
  - **SD2**: 2.68 sq mi (0.74%)
- **Critical Facilities Affected**:
  - Fire Department: 41 (12.17%)
  - Public Works: 32 (13.91%)
  - Health Services: 12 (18.46%)
  - Public Health: 4 (10.00%)
  - Libraries: 9 (10.34%)
  - Parks: 27 (14.92%)
  - Education: 8 (9.76%)

Problem Statement

Landslides pose a serious risk to hillside communities and access routes, especially in areas recovering from wildfire. Current development and road infrastructure may not be resilient against slope failure. Mitigation actions should include slope stabilization, targeted buyouts or relocations, and early warning systems.

6.8.8 Impacts

Los Angeles County's diverse landscape and dense population make it highly susceptible to the effects of land movement, affecting critical infrastructure and raising significant economic, social, and safety concerns.

Transportation Networks

Los Angeles County's extensive transportation network is vital for daily commutes, goods transport, and emergency services. Land movement can severely impact these systems:

- **Road Damage**: Causes closures, hazardous driving conditions and costly repairs, as seen annually on Pacific Coast Highway (PCH), and many other local roads.
- **Bridge Compromise**: Affects structural integrity, necessitating closures and expensive reconstructions.
- **Public Transit Disruptions**: Impacts train tracks and bus routes, leading to delays and service interruptions.
- **Rail Systems:** Track misalignment can cause delays and potential derailments, affecting both passenger and freight lines.

Water Supply Systems

The county's water delivery system is complex and vulnerable to land movement:

- **Compromised Pipelines**: Leads to ruptures or leaks, disrupting supply and requiring major repairs.
- **Reservoir Impact**: Landslides can affect water quality and storage capacity.

Energy Infrastructure

Land movement poses risks to Los Angeles County's energy infrastructure, including:

- **Electrical Grid Vulnerabilities:** Land movement can damage power lines and substations, causing outages.
- **Gas Pipeline Risks:** Soil shifts can result in gas leaks or explosions, endangering safety.

Communication Systems

Reliable communication is critical, and land movement can disrupt:

- **Telecommunication Towers:** Structural damage can impair cellular and internet services.
- **Underground Cables:** Earth shifts can damage cables, affecting connectivity.

Emergency Services Facilities

- **Hospitals and Fire Stations:** Essential for emergency response, but structural damage could impede operations, underscoring the need for resilient construction and strategic planning.

Economic Impacts

- **Infrastructure Damage:** Leads to costly repairs and maintenance of roads, bridges, and buildings.
- **Property Loss:** Homeowners face financial losses due to property damage or devaluation.

Environmental Impacts

- **Ecosystem Disruption:** Soil movement can lead to habitat loss and affect local flora and fauna.
- **Increased Pollution:** Erosion can result in sediment runoff, degrading water quality in rivers and oceans.

For a better visual representation of the Land Movement Hazard within the LA County planning area, please reference Appendix A for maps that show areas that are susceptible to land movement and recent burn scars.

6.8.9 Mitigation Strategies

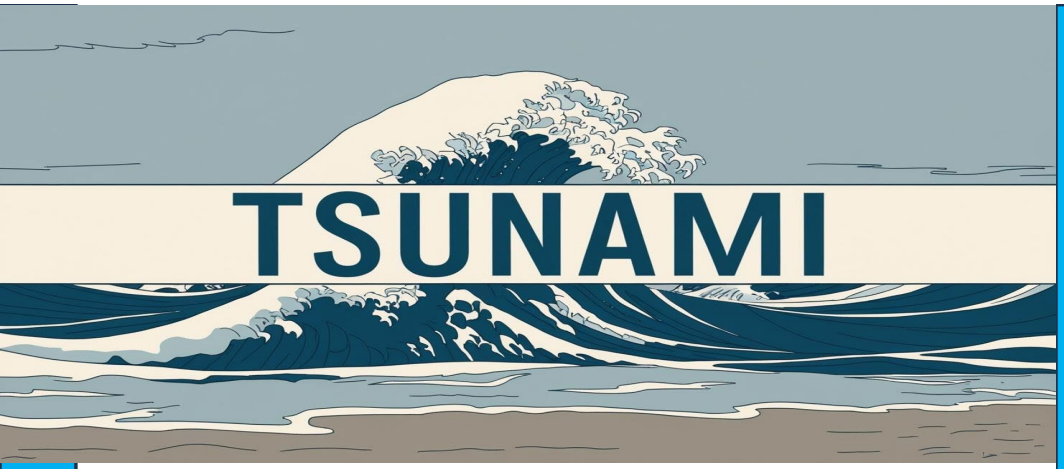
To reduce the impact of land movement, Los Angeles County has implemented several mitigation and preparedness strategies, including:

- **Land Use and Development Regulations:** Restricting development in high-risk landslide zones to prevent new structures from being built on unstable terrain.
- **Infrastructure Resilience:** Reinforcing existing infrastructure through slope stabilization projects, retaining walls, and improved drainage systems.

- **Stabilization Regulations:** Implementing stricter grading and excavation regulations to minimize the destabilization of slopes.
- **Public Awareness Campaigns:** Enhancing landslide early notifications by monitoring potential movement areas and precipitation thresholds.
- **Evacuation Planning:** Developing evacuation plans for at-risk communities, ensuring residents receive timely alerts and clear guidance.
- **Public Education:** Conducting public education campaigns to inform residents about recognizing landslide warning signs and preparedness measures.
- **Operational Area Coordination**: Increasing coordination across state, federal, and Office of Emergency Management officials with local jurisdictions to improve forecasting and response efforts.

6.8.10 Summary

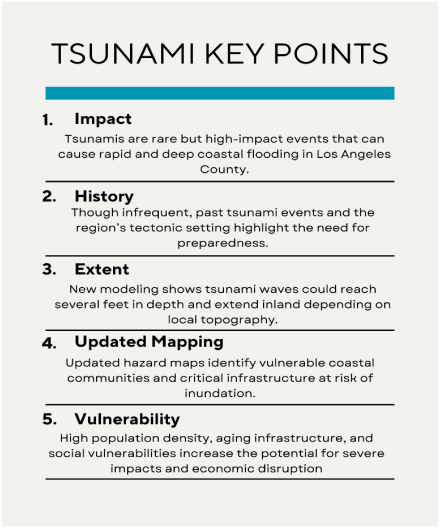
Land movement remains a significant hazard in Los Angeles County, particularly in steep and coastal regions. The Palos Verdes Peninsula, Santa Monica Mountains, and San Gabriel Mountains are among the most vulnerable areas, with climate change and human activities exacerbating risks. By implementing land-use regulations, infrastructure reinforcements, and emergency response improvements, the County can enhance resilience and reduce losses in the future. Local governments and communities must actively monitor and manage contributing factors to effectively mitigate the impacts of land subsidence.



6.9 Tsunami

6.9.1 Nature

This section characterizes tsunamis as high-energy, long-wavelength ocean waves generated primarily by significant offshore seismic events (such as subduction zone earthquakes), submarine landslides, or volcanic eruptions. In the context of Los Angeles County, tsunamis represent a relatively infrequent but potentially high-impact hazard that could produce rapid coastal inundation and surge impacts.



Characteristics:

- Triggered mainly by distant, large-magnitude seismic events.
- Features long wavelengths and prolonged arrival times.
- Capable of producing rapid, deep inundation along low-lying coastal areas.
- In summary, tsunamis are dynamic natural phenomena with the potential to cause sudden coastal flooding and damage if a triggering event occurs.

6.9.2 Location

The updated tsunami hazard profile focuses on the coastal areas of Los Angeles County. The new zone map—developed using enhanced modeling techniques and updated coastal geomorphology data—highlights areas along the Pacific shoreline that are at risk. These include regions adjacent to the Los Angeles Basin, parts of Long Beach, Santa Monica Bay, and other low-elevation coastal zones.

For a better visual representation of Tsunami Inundation zones within the LA County planning area, please reference Appendix A for a "Tsunami Inundation Area" map.

Important Details:

- Coastal segments from the western margins of the Los Angeles Basin extending to the border with Orange County.

Overall, the coastal areas of Los Angeles County, containing our communities and infrastructure, face heightened exposure.

6.9.3 Extent

Using the latest hydrodynamic and inundation modeling, the updated tsunami inundation (zone) map provides a refined view of the extent of potential flooding. The map illustrates how tsunami waves could propagate inland, showing revised boundaries that account for current sea-level conditions and future sea-level rise projections.

Highlights:

- Inundation depths and reach have been recalculated, with some areas potentially experiencing water levels up to several feet in depth.
- The inland reach of flooding varies by local topography, with flat, low-lying areas showing the greatest potential for impacts. Impacted areas include, but are not limited to, Long Beach, The ports of Long Beach and Los Angeles, Marina del Rey, Venice and Santa Monica.
- Critical infrastructure within the updated zones has been identified to prioritize mitigation and evacuation routes for planning.

In essence, the extent of tsunami impacts is now mapped more precisely, offering local decision-makers a clearer view of potential flooding depths and distances inland.

6.9.4 History

Historically, significant tsunami events in the Los Angeles region are rare, though distant seismic events (for example: the 1960 Chilean tsunami, or the most recent 2022 Tonga tsunami) have been known to produce measurable impacts. Historical records combined with geological studies indicate that while tsunamis have occurred in the past, their frequency is low compared to other hazards. However, the region's proximity to major tectonic boundaries necessitates ongoing vigilance.

Historical Context:

- Past events have been sporadic but can serve as valuable lessons for preparedness.
- Historical inundation records and sediment studies confirm that tsunamis have reached the Los Angeles coast in prehistory.
- Lessons learned from past minor events underscore the importance of maintaining updated hazard maps.

Thus, while historical tsunami events are infrequent, they provide a critical context for understanding future risks and guiding preparedness measures. There have been no federal declarations or state proclamations for tsunami in the last five years.

6.9.5 Probability

The probability of a tsunami affecting Los Angeles County is generally low when compared to more frequent hazards like earthquakes or floods. Nevertheless, the potential for a distance source tsunami generated by a distant, large seismic event remains a realistic risk. Updated probabilistic assessments—incorporating recent seismic data and tsunami modeling indicate that while the overall likelihood is low, the consequences in the event of a tsunami can be severe.

Probability Considerations:

- Low annual probability but high consequence if an event occurs; Los Angeles County has about a 2% annual chance.
- Distance source events from subduction zones across the ocean contribute most to the risk.
- Continuous monitoring and updated modeling are essential to reassess the risk over time.
- In summary, the probability of a tsunami remains low, but due to the potential for high-impact outcomes, it warrants continuous study and preparedness.

6.9.6 Vulnerability

Coastal vulnerability in Los Angeles County is significantly influenced by factors such as urban density, low-elevation terrain, aging infrastructure, and socio-economic conditions. The updated tsunami zone map now better delineates areas where these vulnerabilities are most pronounced, highlighting communities that may have limited evacuation routes and fewer resources to recover from rapid inundation. About 75,000 people live in parts of Los Angeles County that could be flooded by a tsunami. Many people also work in these coastal areas, and around 660 unhoused individuals live there, making them especially at risk because they may not have easy access to shelter or transportation.

Tourism adds even more people to these areas, especially during busy weekends or holidays. Places like Santa Monica can see up to 300,000 visitors a day during peak times. This makes evacuating harder if a tsunami warning is issued. Roads near the coast can quickly become crowded, and visitors may not know the best way to leave. Traffic could slow down emergency plans, so it's important to have clear signs, early warnings, and good traffic control to help people get to safety quickly.

Factors:

- High population density in low-lying coastal areas.
- Critical infrastructure (e.g., hospitals, utilities, ports and shipping, transportation networks) located within the inundation zones.
- Socio-economic and language barriers that may hinder effective emergency response.
- Limited natural barriers in some coastal segments.
- Vulnerable communities include those with high population densities and critical infrastructure near the coast.

Ultimately, the vulnerability of the region is compounded by both physical exposures and social factors, underscoring the need for targeted mitigation efforts.

Contextual Overview

Coastal communities in Los Angeles County, including ports and tourist zones, are at risk from tsunamis. These rare but highly destructive events can inundate coastal infrastructure with little warning.

Extent of Exposure

- **Total Area Exposed**: 32.89 sq mi
- **Supervisorial Districts (SD) Impacted**:
  - **SD4**: 15.83 sq mi (7.43%)
  - **SD3**: 12.59 sq mi (2.92%)
  - **SD2**: 2.03 sq mi (0.56%)
- **Critical Facilities Affected**:
  - Fire Department: 16 (4.75%)
  - Public Works: 9 (3.91%)
  - Health Services: 3 (4.62%)
  - Public Health: 1 (2.50%)
  - Libraries: 5 (5.75%)
  - Parks: 13 (7.26%)
  - Education: 3 (3.66%)

Problem Statement

Tsunamis can cause rapid and catastrophic coastal flooding. With critical coastal infrastructure and residential areas exposed, especially in SD4 and SD3, there is a need for robust evacuation planning, vertical evacuation shelters, and community outreach to enhance preparedness and reduce vulnerability.

6.9.7 Impacts

Should a tsunami occur, the potential impacts on Los Angeles County could be extensive. Parts of Los Angeles County that could be impacted by a Tsunami are Marina Del Rey, Port of Los Angeles, Port of Long Beach, and other beach communities in low lying areas. The updated impact assessments reflect possible scenarios ranging from significant property damage to loss of life and long-term economic disruption. The new zone map aids in quantifying these impacts by providing detailed inundation depths and spatial extents, thereby allowing for better risk communication and planning.

Potential Impacts:

- Severe flooding of coastal infrastructure and residential areas.
- Disruption of transportation, utility services, and emergency response operations.
- Economic losses in key sectors such as tourism, shipping, and local commerce.
- Social impacts including displacement, loss of livelihoods, and challenges in emergency sheltering.

In short, the potential impacts of a tsunami are far-reaching, necessitating robust mitigation, evacuation, and recovery planning to minimize harm.

For a better visual representation of Tsunami Inundation zones within the LA County planning area, please reference Appendix A for a "Tsunami Inundation Area" map.

6.9.8 Summary

The updated tsunami section for the 2025 AHMP incorporates the latest scientific findings and mapping techniques to provide a more precise understanding of tsunami risks in Los Angeles County. By integrating an updated inundation zone map, the revision clarifies the spatial extent of potential flooding and highlights the vulnerabilities in coastal communities. This comprehensive update is designed to guide decision-makers in enhancing preparedness, targeting mitigation strategies, and strengthening community resilience.

Key Takeaways:

- **Nature:** Tsunamis are infrequent but high-energy events capable of rapid coastal inundation.
- **Location & Extent:** The updated zone map identifies vulnerable coastal areas with revised inland flood extents.
- **History & Probability:** Historical events are rare; however, distance events remain a realistic risk.
- **Vulnerability & Impacts:** High population density and critical infrastructure in coastal zones amplify risk, with potential for severe economic and social disruption.

This updated section is intended to serve as a critical tool for policymakers, emergency managers, and community stakeholders as they work together to reduce the long-term risks associated with tsunamis and enhance overall regional resilience.



6.10 Severe Wind and Tornado

6.10.1 Nature

Severe wind and tornadoes pose significant threats to life, property, and infrastructure, though they differ in frequency and intensity within Los Angeles County. Severe wind events, particularly Santa Ana winds, are a recurring natural hazard that can cause widespread damage, including downed power lines, tree falls, and structural damage. These winds originate from high-pressure systems over the Great Basin, funneling dry and warm air through mountain passes into the coastal and valley regions at high speeds. Additionally, storm-driven winds, microbursts, straight-line winds and gust fronts associated with severe weather can create hazardous conditions, often leading to transportation disruptions, fire hazards, and prolonged power outages.

WIND & TORNADO KEY POINTS

1. **Nature**
   Severe wind events such as Santa Ana winds and occasional tornadoes can cause widespread disruption, infrastructure damage, and increased wildfire risk
2. **Location**
   High-wind zones are common in canyon passes, valleys, and coastal regions, while tornadoes may occur sporadically throughout the county during severe storm activity.
3. **Extent**
   Santa Ana and storm-driven winds can exceed 80 mph; tornadoes in the area typically range from EF-0 to EF-1, with limited but impactful damage.
4. **Vulnerability**
   Critical infrastructure, older or poorly constructed buildings, wildfire burn scars, and residents with limited mobility are most at risk from high wind and tornado events.
5. **Mitigation and Preparedness**
   Strengthening building codes, retrofitting infrastructure, vegetation management, tornado-resistant construction, early warning systems, and public education.

Tornadoes, while relatively rare in the region, have been recorded and can cause localized but intense damage. These violent windstorms form when unstable atmospheric conditions produce rotating updrafts, resulting in a funnel cloud that contacts the ground.

6.10.2 Location

Severe wind events affect the entire Los Angeles County planning area, with the strongest occurrences in canyon passes, valleys, and coastal regions. The Santa Ana winds are most intense in the fall and winter months, particularly impacting areas in the Valley, and foothill communities of the County. Storm-driven winds, on the other hand, can impact any part of the county and vary in intensity based on weather patterns. These winds can reach speeds of 60 to 80 mph, sometimes exceeding those thresholds, leading to significant damage.

Tornadoes are more sporadic in occurrence and can develop in various parts of the county, particularly in lowland areas where severe thunderstorms have the potential to form rotating systems.

6.10.3 Extent

Winds and breezes are common occurrences in LA County. As wind speeds increase so does the potential for a catastrophic event. Hot dry winds can reach high speeds as they descend from the inland desert regions, creating not only critical wind events but also extremely dangerous fire conditions and contributing to the spread of wildfires. The winds are classified in the Beaufort Wind Scale, see Figure 6.10.1 below. Beaufort wind scale is an empirical scale that relates wind speed to observed conditions at sea or land. It uses numerical scale from 1-12 to describe wind force based on visual observations of the effects of the wind and gives quantitative measures of the wind. For example, o is described as 'calm' a sea like a mirror while 12 described as hurricane force with devastating conditions.

Tornadoes are classified using the Enhanced Fujita (EF) Scale Figure 6.10.2. The Enhanced Fujita (EF) Scale is specifically used to rate the intensity of tornados based on the damage they cause (damage indicators) such as building types, and trees. It ranges from EF-0 to EF-5, with increasing numbers indicate stronger tornados and more severe damage. While tornadoes in the region typically do not exceed EF-1

intensity, they can still produce damaging winds above 100 mph, capable of tearing roofs off buildings, uprooting trees, and overturning vehicles.

Beaufort Wind Scale:

Force	Wind (Knots)	WMO Classification	Appearance of Wind Effects	
			On the Water	On Land
0	Less than 1	Calm	Sea surface smooth and mirror-like	Calm, smoke rises vertically
1	1-3	Light Air	Scaly ripples, no foam crests	Smoke drift indicates wind direction, still wind vanes
2	4-6	Light Breeze	Small wavelets, crests glassy, no breaking	Wind felt on face, leaves rustle, vanes begin to move
3	7-10	Gentle Breeze	Large wavelets, crests begin to break, scattered whitecaps	Leaves and small twigs constantly moving, light flags extended
4	11-16	Moderate Breeze	Small waves 1-4 ft. becoming longer, numerous whitecaps	Dust, leaves, and loose paper lifted, small tree branches move
5	17-21	Fresh Breeze	Moderate waves 4-8 ft taking longer form, many whitecaps, some spray	Small trees in leaf begin to sway
6	22-27	Strong Breeze	Larger waves 8-13 ft, whitecaps common, more spray	Larger tree branches moving, whistling in wires
7	28-33	Near Gale	Sea heaps up, waves 13-19 ft, white foam streaks off breakers	Whole trees moving, resistance felt walking against wind

8	34-40	Gale	Moderately high (18-25 ft) waves of greater length, edges of crests begin to break into spindrift, foam blown in streaks	Twigs breaking off trees, generally impedes progress
9	41-47	Strong Gale	High waves (23-32 ft), sea begins to roll, dense streaks of foam, spray may reduce visibility	Slight structural damage occurs, slate blows off roofs
10	48-55	Storm	Very high waves (29-41 ft) with overhanging crests, sea white with densely blown foam, heavy rolling, lowered visibility	Seldom experienced on land, trees broken or uprooted, "considerable structural damage"
11	56-63	Violent Storm	Exceptionally high (37-52 ft) waves, foam patches cover sea, visibility more reduced	
12	64+	Hurricane	Air filled with foam, waves over 45 ft, sea completely white with driving spray, visibility greatly reduced	

Figure 6.10.1 Beaufort Wind Scale

Enhanced Fujita Scale:

THE ENHANCED FUJITA SCALE (EF SCALE)		
EF RATING	**3 Second Gust (MPH)**	**DAMAGE**
EF 0	65-85 MPH	Light: Branches broken, minor roof damage
EF 1	86-110 MPH	Moderate: Roofs damaged; trees uprooted
EF 2	111-135 MPH	Considerable: Roofs torn off, large trees down
EF 3	136-165 MPH	Severe: Homes destroyed; cars lifted
EF 4	166-200 MPH	Devastating: Houses leveled; debris airborne
EF 5	Over 200 MPH	Incredible: Homes swept away; total destruction

Figure 6.10.2 Enhanced Fujita Scale

6.10.4 History

Los Angeles County has experienced multiple severe wind events and occasional tornadoes in recent history which caused destructions, and wildfires. There have been no federal declarations or state proclamations for Severe Wind & Tornadoes in the last five years. Some notable incidents include:

- **November-December 2011:** A wind event caused more than $35 million in damages and severely impacted several foothill communities and unincorporated areas.
- **December 2019:** An EF-0 tornado touched down in South Los Angeles, causing minor roof damage and downing power lines.
- **January 2021:** A severe windstorm impacted the region, leading to damage across multiple communities and emergency response efforts to clear roadways.
- **September 2021:** An EF-0 tornado developed near the community Lake of Los Angeles; %no damage was reported.

- **April 2023:** An EF-0 tornado recorded in Cerritos causing tree damage.
- **March 2023** (**DR# 4699):** An EF-1 tornado struck Montebello, one of the strongest tornadoes recorded in the area, causing significant damage to commercial structures and vehicles.
- **May 2023:** An EF-0 tornado occurred near the communities of Carson and Compton damaging buildings and vehicles.
- **August 2023 (DR# 4750):** Tropical Storm Hillary impacting Los Angeles County.
- **February 2024**: Strong winds impacting across Eastern Santa Monica Mountain and Santa Clarita Valley.
- **March 2024**: Strong winds impacting areas around San Gabriel Valley.
- **January 2025 (DR# 4856):** A severe windstorm impacted the region, leading to a Potentially Dangerous Situation (PDS), red flag conditions. Several fires broke out in the area, which exhibited extreme fire behavior, causing widespread destruction.
- **March 2025 (DR# 4856):** As part of a storm event, an EF-0 tornado struck Pico Rivera, California, at 3:15am, with wind speeds reaching up to 85 mph.

6.10.5 Probability

Severe wind events are a regular occurrence in Los Angeles County, with a high probability, 99% chance recurring annually. Santa Ana winds are particularly common during the cooler months, and climate patterns suggest that extreme wind events may become more frequent due to changing weather dynamics. Because wind events and tornados are localized in nature, probability vary from one area to another and is difficult to determine percentage of happening in one area. Tornadoes remain a low-probability hazard, 10% chance, in the planning area; however, given past occurrences, they cannot be ruled out entirely. Atmospheric conditions capable of producing tornadoes may arise during severe thunderstorms, particularly in winter storm systems that generate strong wind shear. While the likelihood of an EF-2 or stronger tornado is minimal, the potential for localized damage remains. The Santa Ana winds occur ten to twenty-five times annually and can last for several days, posing a recurring threat of damage and disruption in Los Angeles County.

6.10.6 Vulnerability

Severe wind and tornadoes can be extensive, affecting both infrastructure and public safety. High-wind events pose a risk to critical infrastructure, particularly power lines, communication systems, and transportation networks. Buildings, especially older structures and mobile homes, are vulnerable to wind-related damage, including roof failures, window breakage, and structural collapse.

In addition to physical damage, severe wind events can cause significant economic disruptions. Prolonged power outages impact businesses, healthcare facilities, and emergency response services. Road closures and debris blockages hinder mobility and commerce, while wind-driven wildfires, a secondary hazard of Santa Ana winds, can lead to devastating losses.

Public safety is also a major concern, with risks of flying debris, vehicle accidents, overturned vehicles, and respiratory issues caused by airborne dust and pollutants stirred up by high winds.

Severe wind and tornado events disproportionately impact certain populations and infrastructure in Los Angeles County due to both geographic exposure and socioeconomic vulnerabilities. These hazards can disrupt critical services, exacerbate existing inequalities, and significantly damage structures not built to withstand extreme wind conditions.

Vulnerable Populations

Out of the county's estimated 10.2 million residents, the following populations are considered especially vulnerable:

- Older Adults (65+): Approx. 1.6 million residents (15.5%)—more likely to suffer injury or health complications during wind-related power outages and evacuation events.
- Access and Functional Needs (AFN) Populations: Estimated 1.7 million individuals (17%) including those with disabilities, limited mobility, or communication barriers.
- Low-Income Households: Over 13% of households fall below the poverty line and may lack the resources for structural mitigation or relocation during prolonged outages.

- People Experiencing Homelessness (PEH): Over 75,000 individuals (2024 LAHSA count), at direct risk from falling debris and lack of shelter during windstorms.
- Mobile Home Residents: Approximately 98,000 units countywide, concentrated in inland valleys and foothill communities that are highly exposed to Santa Ana winds.
- Children Under Age 5: Around 600,000 countywide, vulnerable to respiratory complications from airborne particulates and debris stirred by strong winds.
- Economic Impact: Business disruptions, increased insurance claims, and the costs of emergency response and recovery add financial burdens to local communities.

Critical Infrastructure at Risk

Severe wind and tornado events can cause widespread cascading failures in vital systems, including:

- Power Infrastructure: Los Angeles County contains over 20,000 miles of overhead power lines vulnerable to high-wind damage and fire ignition.
- Medical Facilities: Over 350 licensed hospitals and health clinics, many reliant on uninterrupted power and access for vulnerable patient populations.
- Transportation Corridors: Major highways (I-5, I-10, US-101) and over 3,100 bridges, particularly in canyon and foothill areas, are susceptible to obstruction by fallen trees and debris.
- Communication Towers: Over 800 critical telecom sites serve the county's emergency communications and can be disrupted by high wind gusts.
- Schools: Approximately 2,300 public K–12 schools and 100+ college campuses face operational disruptions from power outages or infrastructure damage during events.

6.10.7 Impacts

Severe wind and tornado events pose significant threats to critical infrastructure, public safety, and community operations in Los Angeles County. High winds, such as those during Santa Ana events, regularly damage power lines, uproot trees, and disable

transportation corridors. A notable example occurred in January 2025, when widespread windstorms caused power outages for more than 200,000 customers, including approximately 127,000 Los Angeles Department of Water and Power (LADWP) customers and over 52,000 Southern California Edison (SCE) customers. During this same period, wildfires exacerbated by the strong winds impacted several medical facilities, disrupting critical health services and requiring the emergency relocation of patients.

Tornadoes, while rare, have also demonstrated destructive capacity in localized areas. In March 2025, an EF-0 tornado touched down in Pico Rivera, downing power lines and trees and obstructing roadways, highlighting the potential for tornadic activity to impact urban communities. These hazards not only endanger life and property but also threaten economic continuity and the functioning of emergency services, particularly in vulnerable neighborhoods and areas with aging infrastructure.

6.10.8 Mitigation and Preparedness

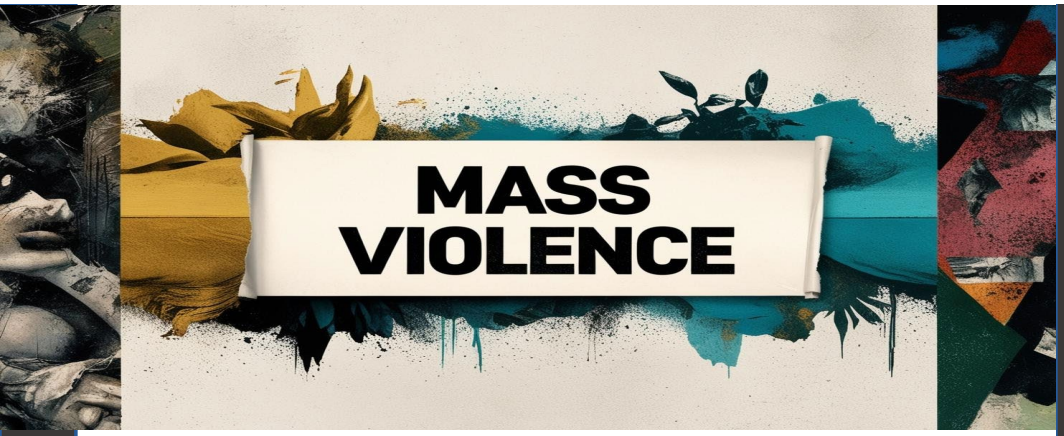
Efforts to mitigate the effects of severe wind and tornadoes should focus on improving structural resilience, enhancing early warnings and alerts, and increasing public awareness of such events.

Severe Wind and Tornado Mitigation

- Strengthening building codes to require wind-resistant design features. Promoting the use of wind-resistant materials and construction techniques in new developments.
- Conducting regular tree-trimming and vegetation management to reduce infrastructure damage risks.
- Retrofitting and reinforcing critical infrastructure, such as power lines and utility systems, to withstand high-wind conditions.
- Implementing public education campaigns on windstorm preparedness and safety measures.
- Leveraging early warning alerting and preparedness messaging, as well as integrating emergency messaging with local broadcast and mobile networks.

6.10.9 Summary

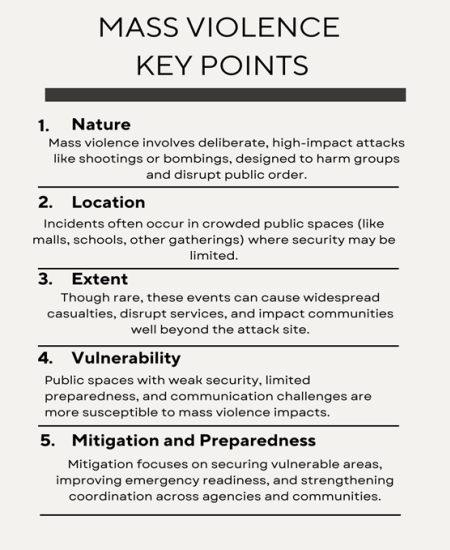
Severe wind and tornadoes, though differing in frequency, remain potential hazards for Los Angeles County. Santa Ana winds and storm-driven gusts regularly impact the region, causing damage to infrastructure and increasing wildfire risks. While tornadoes are rare, their occasional occurrence necessitates preparedness and mitigation efforts. By implementing stronger building codes, reinforcing critical infrastructure, and enhancing preparedness and public awareness, the county can reduce its vulnerability to these hazards, helps to better protect its residents from potential hazards of severe winds and tornado and improve community resilience.



6.11 Mass Violence

6.11.1 Nature

This section outlines the defining characteristics of mass violence, which includes intentional, high-impact incidents such as terrorism, active shooter events, vehicle-rammings, and other coordinated attacks. Understanding the nature of these events is critical for developing effective mitigation strategies.



- Mass violence includes both targeted attacks (e.g., ideologically motivated terrorism) and opportunistic acts (e.g., active shooters or violent assaults in public spaces).
- These incidents are characterized by their low warning time, high lethality, and potential to incite widespread fear and panic.

- Acts of mass violence may be perpetrated by individuals, small groups, or well-organized networks, and can involve firearms, explosives, vehicles, or biological agents.
- These attacks often aim to disrupt societal functions, damage infrastructure, or exploit vulnerabilities in soft targets such as schools, places of worship, or entertainment venues.

In summary, the nature of mass violence lies in its deliberate intent to inflict harm on groups and disrupt public order, making strong mitigation measures essential for protecting life and property of Los Angeles County.

6.11.2 Extent

The potential extent of mass violence is characterized by its ability to cause widespread disruption and significant loss of life and property.



- Events can result in many casualties and severe physical and psychological impacts.
- Mass violence can disrupt essential services, strain emergency response systems, and create cascading socioeconomic effects.
- The overall disruption may extend far beyond the immediate scene, affecting broader community resilience.

In essence, while these events may be rare, their extensive impacts necessitate comprehensive planning and resilient infrastructure.

6.11.3 History

Historical data illustrates that mass violence has evolved over time, with earlier events shaping current mitigation strategies and more recent incidents underscoring emerging vulnerabilities. Previous mitigation and other plans referenced events such as large-scale terrorist attacks and active shooter incidents.

- Recent events in the last five years include high-profile active shooter incidents at schools, public transportation hubs, and commercial centers, as well as vehicle-ramming attacks in urban areas.

Overall, the historical trend shows that while frequency remains low, the severity of mass violence incidents has escalated, necessitating continual updates to mitigation strategies.

6.11.4 Location

Mass violence incidents tend to occur in areas where people naturally congregate, including urban centers, transportation hubs, educational and religious institutions, shopping centers, and public events and venues.

- Public spaces such as transit stations, stadiums, malls and other locations where large number of people assemble, are considered higher-risk areas.
- Critical infrastructure location, like government buildings and commercial center, are often targeted.
- Certain events may also occur in areas lacking adequate physical security or surveillance.

Thus, identifying and securing high-density locations is a key focus for mitigating the effects of mass violence.

6.11.5 Probability

The probability of mass violence incidents is difficult to predict precisely; however, the potential for occurrence is recognized as a persistent low-frequency, high-impact risk that requires constant vigilance.

- Such incidents are statistically rare yet present a disproportionate risk due to their catastrophic consequences.
- Threat assessments and intelligence reports indicate that evolving tactics may increase probability over time.
- Continuous monitoring and updated threat analyses (e.g., via THIRA processes) are essential in quantifying risk levels.

In summary, while mass violence events are not common, their inherent unpredictability and high severity demand that communities prepare as if an incident could occur at any time.

6.11.6 Vulnerability

Mass violence depends on a variety of factors, including physical infrastructure design, public awareness, security preparedness, and interagency coordination.

- Critical vulnerabilities include open public spaces with minimal physical barriers or limited or ineffective safety / security protocols in place.
- Gaps in training and preparedness among first responders can exacerbate the situation during an active incident.
- Social vulnerabilities—such as communication gaps or lack of multilingual emergency information—may hinder rapid response and community resilience.

Thus, reducing vulnerability involves investing in infrastructure hardening, robust security measures, regular training exercises, and effective public communication strategies.

6.11.7 Impacts

The impacts of mass violence events are multifaceted, life safety, community stability, and the local economy.

- Immediate impacts include fatalities, injuries, and trauma among affected populations.
- Secondary impacts may encompass prolonged disruption of local services, economic downturns, and lasting psychological effects on communities.
- Long-term consequences can involve extensive resource allocation for recovery and mitigation, further straining public systems.

Mass violence inflicts immediate harm and often triggers a chain of secondary impacts that complicate community recovery and strain long-term resilience efforts.

6.11.8 Summary

In conclusion, mitigating the hazards of mass violence requires an integrated, multi-layered approach that spans prevention, preparedness, response and recovery. Communities must implement measures to secure high-risk locations, upgrade physical and digital security, enhance interagency coordination, and continuously update training and threat assessments.

- Mitigation strategies include physical security enhancements (e.g., barriers and surveillance), regular active shooter drills, improved emergency communication systems, and coordinated law enforcement and public health responses.
- Investment in resilience-building measures and community outreach helps to ensure that, in the event of an incident, communities can recover quickly and effectively.

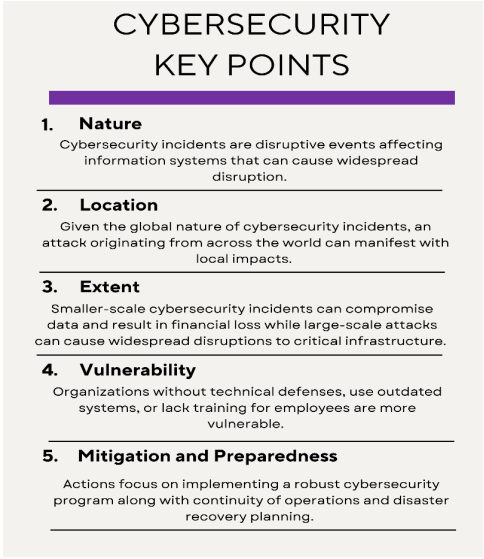
This section underscores that while mass violence events are rare, their potential for high impact demands rigorous preparedness and adaptive mitigation strategies to safeguard lives and maintain community functionality.



6.12 Cybersecurity Incidents

6.12.1 Nature

Cybersecurity incidents refer to disruptive events affecting digital networks and systems. These events involve the unauthorized electronic or physical access of information systems that jeopardizes or disrupts the integrity, confidentiality, or availability of information. Cyber incidents can range from minor targeted data breaches to large-scale ransomware attacks and distributed denial-of-service (DDoS) events that compromise critical infrastructure. Common types of cybersecurity incidents include, but are not limited to:



- **Data Breaches:** The compromise, unauthorized disclosure, or unauthorized acquisition of information.

- **Malware:** Malicious hardware, firmware, or software that is intentionally included or inserted in a system for a harmful purpose.
- **Ransomware:** A type of malicious software designed to lock access to a system until a ransom payment is received. Note that ransom payment is not a guarantee that system access will be restored by the threat actor.
- **Denial of Service (DoS):** An attack meant to shut down a machine or network, rendering it inaccessible to its intended users.
- **Distributed Denial of Service (DDos):** A DoS attack that uses numerous hosts to perform the attack.
- **Insider Threats:** When an insider (e.g., an employee or vendor) uses their authorized access, wittingly or unwittingly, to do harm to an organization.
- **Phishing Attacks:** The fraudulent practice of sending emails purporting to be from reputable senders in order to induce individuals to reveal information or download malware by clicking on a link.

Key characteristics of a cybersecurity incident include:

Rapid Onset: Impacts to operations can occur suddenly and evolve quickly.

- **Sophistication:** Can be highly sophisticated with state or non-state actors involved.
- **Hybrid Attacks:** May involve both cyber and physical components due to interdependencies.
- **Non-Malicious Incidents:** Technological failures that cause similar impacts to cybersecurity incidents may also occur due to non-malicious reasons such as a software or hardware issue.

Understanding the inherent digital nature and complex characteristics of these incidents is critical to developing effective prevention and mitigation strategies.

6.12.2 Location

Unlike traditional hazards that have a physical geographic footprint, cybersecurity incidents are inherently transboundary. However, their effects manifest locally through the disruption of critical services and systems and necessitate regionally coordinated preparedness and response efforts.

Jurisdictional Relevance:

- Impact local government networks and county infrastructure.
- Affect public and private sector systems within Los Angeles County.
- Disrupt critical infrastructure such as utilities and cause cascading impacts.
- Involve cyber nodes that, while globally distributed, converge on regional networks.

Critical Sectors Impacted:

- Hospitals and healthcare facilities.
- Financial, banking, or payroll systems.
- Transportation providers and systems.
- Utilities such as electricity, gas, and water.
- Emergency response and public safety agencies.

6.12.3 Extent

The extent of cybersecurity incidents is measured not only by the volume of compromised data or financial loss but also by the potential disruption to essential services and critical infrastructure.

Scope of Impacts:

- Rapid spread across interconnected digital systems.
- Potential for cascading failures that disrupt multiple sectors.
- Economic losses that may run into millions of dollars.

Measurable Factors:

- Number of systems compromised.
- Downtime of critical infrastructure and services.
- Financial costs from remediation and lost productivity.

The extensive reach of cybersecurity incidents—both in terms of economic impact and service disruption—highlights the need for robust digital defenses, continuity of operations planning, backup systems and redundancies, disaster recovery strategies, and regional cyber response coordination.

6.12.4 History

Historically, cybersecurity incidents have evolved from isolated breaches to coordinated attacks that leverage global networks. Early cybersecurity incidents focused on data theft and vandalism. More recent attacks have grown increasingly sophisticated and targeted critical infrastructure or use complex ransomware. Cyber threat actors include state-sponsored groups along with non-state groups such as criminal enterprises and terrorist organizations. Recent years have seen cybersecurity incidents affecting large corporations, public entities including local governments, and critical infrastructure sectors. Previous major cybersecurity incidents have included:

- **2024 Los Angeles County Superior Court Ransomware Attack:** Resulted in the shutdown of nearly every court system, a multi-day closure of the court, and cascading impacts to operations.
- **2024 Hospital Group Attack:** A major hospital company experienced an attack that caused IT and phone system outages and disrupted patient care at several Los Angeles County hospitals.
- **2024 Telecommunication Industry Attacks**: A series of attacks against telecommunications providers in the United States resulted in compromised customer data.
- **2023 City Attack:** A cybersecurity incident at a city within Los Angeles County caused city IT systems to be taken offline.
- **2022 Aviation Industry Attacks:** A series of cybersecurity incidents targeting the airports and airlines caused transportation system disruptions.

The historical progression from rudimentary attacks to highly coordinated cybersecurity incidents underscores the growing importance of proactive risk management in the digital realm.

6.12.5 Probability

The probability of cybersecurity incidents occurring is increasing as digital interconnectivity expands and as attackers continue to innovate their methods.

Risk Trends:

- Rapid expansion of the Internet of Things (IoT), the network of internet-connected devices ranging from smart refrigerators to autonomous vehicles, has added new attack vectors to the threat landscape.
- Increasing sophistication of cybercriminal methods including zero-day exploits, a previously unknown cybersecurity vulnerability.
- Growing frequency of reported incidents nationally and globally.

Contributing Factors:

- Inadequate cybersecurity measures in legacy systems still being used by organizations.
- Underinvestment in cyber defense infrastructure or cybersecurity expertise.
- Greater digital reliance in everyday operations without proper continuity of operations planning.

Given current trends and technological developments, the likelihood of cybersecurity incidents remains high, necessitating ongoing vigilance and enhanced preparedness measures. As cybersecurity incidents continue to increase in frequency, the potential for an incident to cause cascading and widespread impacts to critical infrastructure increases as well.

6.12.6 Vulnerability

Vulnerability in the context of cybersecurity refers to the susceptibility of digital systems to attack. This is influenced by both technological and organizational factors including, but not limited to: outdated software or use of legacy systems, insufficient patch management, inadequate segmentation and defense-in-depth strategies, and lack of cybersecurity training among personnel. Organizational challenges also contribute to cybersecurity vulnerability including, but not limited to: budget constraints, gaps in coordination, and rapid technology adoption without corresponding security protocols.

According to the 2024 Threat and Hazard Identification and Risk Assessment (THIRA), over 616,000 people may be affected by a large-scale cybersecurity incident with cascading impacts to utilities. Over 123,000 of those impacted in the THIRA scenario are estimated to have access and functional needs and over 77,000 people are

estimated to have limited English proficiency. Depending on the utilities affected by the incident, a widespread amount of the population could be without utility service for an extended period. Addressing these vulnerabilities is essential to reduce the risk and potential disruption of cybersecurity incidents, calling for both technical upgrades and improved interagency coordination.

6.12.7 Impacts

The impacts of cybersecurity incidents are multifaceted, affecting economic stability, public safety, and critical infrastructure operations.

Direct Impacts:

- Disruption of critical services (e.g., healthcare, emergency response, transportation, etc.).
- Extended duration Continuity of Government or Continuity of Operations event.
- Financial losses due to ransom payments, remediation costs, and potential legal fees.
- Loss, compromise, or unauthorized release of sensitive data.

Indirect impacts:

- Erosion of public trust in digital services and affected institutions.
- Cascading effects on physical infrastructure (e.g., power grid, water systems, wastewater, etc.).
- Long-term economic repercussions from reduced competitiveness.
- The significant impacts—both direct and cascading—of cybersecurity incidents necessitate comprehensive mitigation and recovery strategies that address both technical and socioeconomic dimensions.

6.12.8 Summary

In summary, cybersecurity incidents represent an evolving and critical threat that intersects with multiple aspects of community resilience and safety.

Key Takeaways:

- Cyber incidents are dynamic, sophisticated, and far-reaching in impact
- They affect local systems despite their global nature

- Historical trends and increasing digital dependency heighten both probability and vulnerability
- Impacts extend beyond financial loss to include service disruption and cascading infrastructure failures

Cybersecurity incidents demand a proactive, coordinated response that integrates robust technical defenses with cross-sector planning and recovery efforts. By understanding the nature, scope, and potential consequences of these incidents, communities can build more resilient digital and physical infrastructures to safeguard against this growing threat.



6.13 Transportation Incidents

6.13.1 Nature

This section describes the inherent characteristics of transportation incidents that can disrupt the continuous flow of people, goods, and emergency services across Los Angeles County. Transportation incidents can be triggered by a variety of factors including natural events, human error, and deliberate acts. Other characteristics include:

- **Affected Modes of Transportation:** Incidents can involve any mode of transportation such as multi-vehicle collisions, hazardous material spills, rail derailments, aviation incidents, and maritime disruptions.
- **Cascading Impacts:** Disruptions to the transportation system often have the potential to trigger cascading failures due to the interconnected design of highways, rail networks, airports, and seaports.
- **Contributing Factors:** Incidents may be influenced by both predictable factors (e.g., rush-hour congestion) and unpredictable occurrences (e.g., extreme weather or infrastructure failure).

6.13.2 Location

The county's network encompasses highways, rail, airports, ports, and local roads that are critical to regional mobility and commerce.

- **Freeways:** Los Angeles County boasts an extensive freeway system with over 1,200 miles of high-capacity roads including corridors such as I-5, I-405, I-10, I-710, and I-210.
- **Major Transportation Hubs:** The County is home to three commercial airports including Los Angeles International Airport (LAX), Long Beach Municipal Airport (LGB), and the Hollywood Burbank Airport (BUR) along with several general aviation airports. The County owns and operates Brackett Field Airport, Compton/Woodley Airport, San Gabriel Valley Airport, General William J. Fox Airfield, and Whiteman Airport. The Ports of Los Angeles and Long Beach, which are two of the busiest ports in the United States and vital for national and international trade, are also in Los Angeles County. Additionally, Los Angeles Union Station serves as the largest passenger rail station on the west coast.
- **Other Transportation Networks:** The county includes robust passenger rail, bus, and paratransit systems, along with freight rail systems, emerging mobility options such as taxis and rideshare services, and enhanced bicycle networks. This comprehensive network is the backbone for daily commuting, freight movement, and emergency response across the region.

6.13.3 Extent

The scope of transportation incidents spans multiple modes of travel and can have widespread consequences across the county's integrated infrastructure. Road incidents may include multi-vehicle collisions, hazardous material spills, and roadway fires impacting multiple vehicles with potential delays in emergency responses.

- Rail disruptions can impede commuter and freight services, impacting both local transit and regional connectivity.
- Air and maritime incidents—such as delays at major airports or disruptions at port facilities—can significantly affect commerce, supply chains, and public safety.
- Cascading effects across interconnected transportation modes may exacerbate congestion and strain additional infrastructure systems such as power, water, and emergency communications.

The extensive and interdependent nature of these networks means that an incident in one area can quickly influence multiple transportation systems.

6.13.4 History

Los Angeles County has a long record of transportation-related incidents that have disrupted mobility and commerce.

- **2024 Vincent Thomas Bridge Fire:** A semi-truck carrying lithium-ion batteries overturned and caught fire, causing the bridge to be closed for several days.
- **2023 I-10 Freeway Fire:** A fire in a pallet yard below the I-10 freeway in Downtown Los Angeles caused an eight-day closure for repairs and major cascading disruptions.
- **2020 Delta Air Lines Flight 89 Fuel Drop:** Shortly after takeoff from LAX, a Boeing 777 encountered engine problems and conducted a fuel dump over populated areas, injuring over 50 people on the ground.
- **2008 Chatsworth Metrolink Derailment:** A Metrolink passenger train collided with a Union Pacific freight train injuring over 130 people and causing 25 deaths.
- **2007 Newhall Pass Tunnel Fire:** A multi-vehicle collision involving over 30 vehicles caused a fire within the tunnel injuring 10 people and causing 3 deaths.

The historical record reinforces the need to learn from previous events to enhance future preparedness and resilience.

6.13.5 Probability

The likelihood of transportation incidents in Los Angeles County remains elevated due to several converging factors including, but not limited to:

- High daily traffic volumes on freeways and arterials increase the risk of multi-vehicle accidents and congestion-related incidents.
- Aging infrastructure—including bridges, road surfaces, and rail systems—creates a persistent risk of failure, particularly under extreme weather conditions and during peak usage periods.
- The county's role as a major hub for freight and commuter traffic means that even minor incidents can escalate rapidly into larger disruptions.
- The frequent movement of hazardous materials and the increasing reliance on just-in-time delivery systems further elevate the risk of incidents with potentially severe consequences.

Together, these factors contribute to a consistently high probability of transportation incidents impacting the region.

6.13.6 Vulnerability

The vulnerability of Los Angeles County's transportation system is compounded by its interdependent design and its critical role in the regional economy.

- Limited redundancy in key corridors means that a disruption on one freeway or rail line can quickly overload alternate routes.
- Aging and overburdened infrastructure is less resilient to extreme events, leading to longer recovery times after incidents.
- The county's economic dependence on uninterrupted transportation for daily commuting and commercial freight increases exposure to significant losses during disruptions.
- Complex interdependencies between transportation systems, emergency services, and other critical sectors make the network highly sensitive to cascading failures.

This systemic vulnerability calls for coordinated, multi-agency efforts to bolster resilience and implement proactive mitigation measures.

6.13.7 Impacts

Transportation incidents can produce both immediate and long-lasting effects on public safety, commerce, and overall quality of life.

1. **Traffic and Mobility:** Disruptions can lead to severe congestion affecting hundreds of thousands of commuters and freight vehicles, delaying emergency services and disrupting daily operations.
2. **Economic Loss:** Interruptions in the movement of goods and people can result in substantial financial losses, impacting local businesses and the broader regional economy.
3. **Public Safety:** Extended delays in emergency response and Emergency Medical Services (EMS) transport times.
4. **Cascading Disruptions:** An incident in one mode (e.g., a major highway closure) can ripple through the transportation network, affecting rail, air, and maritime operations simultaneously and complicating recovery efforts.

These impacts highlight the critical need for robust mitigation strategies to manage both direct and indirect consequences of transportation incidents.

6.13.8 Summary

Los Angeles County's transportation network is among the most extensive and complex in the nation, serving millions of residents and underpinning a vital economic ecosystem. The diverse transportation modes, while facilitating mobility and commerce, also create vulnerabilities due to overlapping infrastructure and high traffic volumes.

- Aging infrastructure, coupled with the continuous movement of hazardous materials and the increasing pressures of daily usage, contributes to a high probability of incidents.
- Historical data demonstrate that even localized incidents can have far-reaching impacts, including prolonged traffic congestion, economic disruptions, and public safety challenges.

In conclusion, mitigating transportation incident risks in Los Angeles County requires an integrated, countywide approach that combines infrastructure upgrades, enhanced emergency response, and proactive maintenance strategies. Addressing these challenges is essential to safeguard public safety, ensure economic stability, and maintain the region's critical mobility infrastructure.



6.14 Public Health Emergencies

6.14.1 Nature

Public health emergencies in Los Angeles County encompass a broad spectrum of potential hazards, including infectious disease outbreaks, environmental health hazards, and Chemical, Biological, Radiological, Nuclear, Explosives (CBRNE) hazards. Given the county's diverse population, urban density, and economic significance, public health hazards require a coordinated response among government agencies, healthcare institutions, and community partners.

PUBLIC HEALTH KEY POINTS

1. **Nature**
   Public health emergencies include pandemics, disease outbreaks, bioterrorism, and environmental hazards.
2. **Location**
   Highly populated counties face unique public health vulnerabilities.
3. **Extent**
   Public Health Emergencies can derive from local, regional, national, or global sources, affecting various communities.
4. **Vulnerability**
   Older adults, individuals with chronic health conditions, those with low income or experiencing homelessness, and others within the Access and Functional Needs (AFN) community face increased risks during public health emergencies
5. **Mitigation and Preparedness**
   Efforts include vaccinations, disease tracking, healthcare support, public education, emergency supplies, and agency coordination.

Public health emergencies refer to incidents that pose a significant threat to the health of a population. These include, but are not limited to:

- Pandemics (e.g., COVID-19, Influenza)
- Bioterrorism (e.g., Anthrax, Smallpox, botulism)

- Vector-borne diseases (e.g., West Nile Virus, Zika)
- Foodborne and waterborne illnesses
- Chemical and radiological exposure
- Climate-related health threats (e.g., extreme heat, poor air quality, wildfires)

The County of Los Angeles Department of Public Health (DPH) and the Emergency Medical Services Agency (EMS) collaborate to monitor threats, prevent outbreaks, and mitigate impacts when emergencies arise.

6.14.2 Location and Extent

Los Angeles County, home to over 9.7 million residents, is the most populous county in the United States. Its diverse geography (i.e., urban, coastal, mountainous, and rural) and demography lead to a range of public health vulnerabilities.

Public health emergencies can originate from local, regional, national, or global sources, impacting specific neighborhoods or the entire county. The extent of public health threats varies based on:

- The nature of the threat, such as transmission dynamics or availability of medical countermeasures.
- Population density (higher risks in urban centers for communicable diseases)
- Access to healthcare infrastructure
- Environmental conditions (air pollution, extreme heat events)

6.14.3 History

Public health emergencies in Los Angeles County have included:

- 2022 Monkeypox Outbreak
  - Approximately 2,500 cases were reported in Los Angeles County.
- COVID-19 Pandemic (2020–Present)
  - Over 3 million cases, 450,000 hospitalizations, and 45,000 deaths reported in the county alone.
- 2018 Hepatitis A Outbreak
  - Primarily affecting unhoused populations, requiring mass vaccination efforts.
- 2016-2017 West Nile Virus Outbreaks
  - Multiple cases of mosquito-borne infections leading to severe illness and fatalities.

- 2015-2016 Zika Virus Outbreak
  - No cases of local mosquito-borne transmission, but there were 122 cases reported in the County, with 121 being travel-related.
- 2015 Meningococcal Disease Cluster
  - An outbreak among men who have sex with men (MSM) led to a targeted vaccination campaign.
- 2009 H1N1 Influenza Pandemic
  - Thousands of hospitalizations; schools and businesses affected.

6.14.4 Probability and Emerging Risks

The 2024 Threat and Hazard Identification and Risk Assessment (THIRA) identifies that pandemics and bioterrorism remain high-probability threats. Future public health risks also include:

- Emergence of infectious diseases driven by global travel and climate change.
- Increased incidence of heat-related illnesses amid rising temperatures.
- Increased prevalence of respiratory diseases due to declining air quality.
- Rise of antimicrobial-resistant infections due to overuse of antibiotics.

The County of Los Angeles DPH continually assesses health threats and updates preparedness plans to address evolving concerns.

6.14.5 Vulnerability and Systemic Impacts

Certain populations in Los Angeles County may be disproportionately affected by public health emergencies:

- At-risk populations may be different for different hazards before, during, and after an emergency. It is important to assess each hazard in turn to identify those who may be disproportionately affected to improve preparedness and response efforts.

Public health emergencies strain the healthcare system, disrupt economic activity, and create mental health burdens. The 2024 THIRA report noted that:

- Healthcare infrastructure overload is a major concern during pandemics.
- Potential economic loss from business closures during a prolonged public health crisis could exceed billions of dollars.

6.14.6 Mitigation Strategies and Preparedness Efforts

Los Angeles County employs several mitigation and preparedness strategies:

- Mass Vaccination Campaigns
  - Annual flu shots, COVID-19 vaccinations, and outbreak-specific immunization efforts.
- Points-of-Dispensing (POD) sites
  - Disease Surveillance & Early Warning Systems
- Syndromic surveillance for emerging threats.
  - Targeted sampling surveillance.
- Healthcare Infrastructure Strengthening
  - Expanding hospital capacity for medical surge, and emergency medical resources.
- Community Outreach & Public Health Education
  - Disseminating critical information in multiple languages.
- Emergency Stockpiles (Strategic National Stockpile(SNS))
  - Deployment of antibiotics, antivirals, and personal protective equipment (PPE) in crisis situations.
- Coordination with Federal & State Agencies
  - Collaboration with FEMA, CDC, and the California Department of Public Health to enhance response capabilities.
- Anthrax Threat Simulations
  - The County of Los Angeles Metro system assessed as a high-risk area for bioterrorism response.

6.14.7 Summary

Public health emergencies pose significant challenges to Los Angeles County, impacting healthcare systems, vulnerable populations, and economic stability. While the COVID-19 pandemic provided a major stress test for response efforts, ongoing preparedness, surveillance, and mitigation strategies aim to protect residents from future threats.

Key Takeaways:

- Los Angeles County faces diverse health threats, including pandemics, bioterrorism, and climate-related illnesses.

- Vulnerable populations may suffer disproportionate impacts during public health crises.
- Preparedness efforts focus on surveillance, vaccination, emergency response, and coordination with federal and state partners.
- Future threats include emerging infectious diseases, heat-related illnesses, and antimicrobial resistance.

By continuing investments in public health preparedness, Los Angeles County aims to reduce risks and strengthen resilience against future health emergencies.

7 Mitigation Strategy

7.1 Mitigation Strategy Overview

The Mitigation Strategy section of the All-Hazard Mitigation Plan (AHMP) presents Los Angeles County's strategic blueprint for reducing risks and vulnerabilities posed over the long term associated with the hazards identified in the Hazard Identification and Risk Assessment section. The strategies identified in this section drive mitigation activities based on existing capabilities while also identifying areas of potential future investment to build resilience across communities, critical facilities, and other infrastructure within Los Angeles County.

7.2 Mitigation Goals and Objectives

Mitigation goals are the long-term vision that the County hopes to achieve by implementing the various mitigation strategies described in this AHMP, as well as the broad guidelines that have shaped mitigation strategy development.

- **Goal 1: Protect life, property, infrastructure, the environment, and the economy through equitable mitigation strategies aimed at reducing risks of natural and human-caused hazards.**
    - Objective 1-1: Integrate vulnerable populations, including people with Access and Functional Needs (AFN), into the implementation of any potential mitigation actions.
    - Objective 1-2: Implement mitigation strategies that enhance resilience to disaster impacts across residential areas, commercial areas, infrastructure, high-hazard potential dams, and other critical facilities.
    - Objective 1-3: Inform strategic investments in climate adaptation, development, and redevelopment that are centered in equity and resilience.
- **Goal 2: Enhance community-wide partnerships in hazard mitigation across all levels of government, the private sector, and the public.**
    - Objective 2-1: Build a culture of disaster resilience and awareness of local hazards through public engagement, education, and outreach.
    - Objective 2-2: Strengthen direct coordination among Los Angeles County Operational Area partners to unify efforts for mitigation activities.
    - Objective 2-3: Utilize a whole community approach to address disparities in outcomes posed by the hazards identified in this AHMP.
- **Goal 3: Enhance planning, response, and recovery through hazard identification, assessment, mitigation, and resilience activities.**

  - Objective 3-1: Establish and maintain coordination between hazard mitigation activities and other emergency management functions.
  - Objective 3-2: Integrate hazard mitigation activities into preparedness for future large-scale planned events within Los Angeles County.
- **Goal 4: Ensure eligibility for FEMA grant funding to maximize equitable investment in hazard mitigation actions.**
  - Objective 4-1: Continue to meet all requirements for existing hazard mitigation grant programs used by the County.
  - Objective 4-2: Expand the County's ability to participate in grant programs not currently utilized by the County.

7.2.1 Changes in Mitigation Goals

The AHMP Advisory Committee reviewed the 2020 AHMP goals and updated them to reflect the most current County concerns and priorities. Therefore, the 2025 AHMP has introduced new goals and objectives to build a more resilient community. Table 7-1 (below) compares the 2025 AHMP goals with previous 2020 AHMP goals; all other goals above are new goals and objectives developed by the AHMP Advisory Committee.

Mitigation priorities change through time depending on the type of disaster impacting Los Angeles County, vulnerability, the strategies implemented, as well as other needs of the community. Priorities are also made based on current countywide Threat and Hazard Identification and Risk Assessment (THIRA) studies, National Risk Index Assessment, State Hazard Mitigation Plan (SHMP) and other local plans and guides. The previous 2020 AHMP integrated hazard data into several operational plans including but not limited to the General Plan, Operational Area Emergency Operations Plan (OAEOP), amongst others. Addressing these changes will help to address Los Angeles County hazard priorities and to have mitigation strategies focused on the hazards that impact the region at most. The plan also added additional hazards and addressed a larger vulnerable population.

Table 7-1 Mitigation Goal Updates

Goals Addressed in 2020 AHMP	Goals for 2025-2030 Planning Period	Changes
Build a culture and practice disaster resilience	Goal 2 (see above).	Goal expanded; previous goal integrated as an objective under Goal 2 in the current AHMP.
Better plan for, respond to, and recover from, hazards and disasters including climate change, drought, earthquake, dam failure, flood, landslide, tsunami, and wildfire that affect Los Angeles County.	Goal 3 (see above).	Previous goal replaced with new goal.
More successfully adapt to hazards and disasters including climate change, drought, earthquake, dam failure, flood, landslide, tsunami, and wildfire that affect Los Angeles County.	Goal 1 (see above).	Previous goal replaced with new goal.

7.3 Existing Mitigation Capabilities

The mitigation strategies developed as part of this AHMP seek to maximize existing mitigation capabilities identified as currently available within the Los Angeles County Operational Area. These existing capabilities have been updated to reflect changes in human, technical, financial, legal, regulatory, education, and outreach resources since the 2020 AHMP.

7.3.1 Authorities, Policies, and Legal/Regulatory Resources

There are several existing authorities, policies, and other legal or regulatory resources applicable to hazard mitigation efforts in Los Angeles County. From the County Code of Ordinances to completed plans, these form the cornerstone of hazard mitigation activities by providing a foundation rooted in data, research, planning, Technical Ecological Knowledge (TEK) provided by our state and locally recognized indigenous communities, and elected officials' authority. The County aims to expand and improve upon these identified capabilities by adopting this AHMP, once approved, into the Safety Element of the Los Angeles County General Plan. This action will contribute to the County's ability to be considered for an additional cost-share on Public Assistance projects through the California Disaster Assistance Act. Table 7-2 provides an overview of existing capabilities related to authorities, policies, and legal/regulatory resources.

Table 7-2 Authorities, Policies, and Legal/Regulatory Resources

Authority, Policy, or Resource	Description	Hazards Addressed	Potential to Affect Development
Los Angeles County Operational Area Emergency Operations Plan (2023)	Establishes the coordinated emergency management system within the Los Angeles County Operational Area to prepare for, respond to, and recover from the effects of large-scale emergencies regardless of cause, location, or complexity.	All-Hazard	No
Los Angeles County General Plan (2024)	Provides the policy framework for how and where the unincorporated County will grow through the year 2035.	All-Hazard	Yes
Los Angeles County Comprehensive Floodplain	Reviews existing floodplain management programs in the County and recommends enhancements to them through 35	Flood Land Movement	Yes

Authority, Policy, or Resource	Description	Hazards Addressed	Potential to Affect Development
Management Plan (2021)	mitigation actions. This plan is currently being reviewed and updated with completion targeted for early 2026.		
Los Angeles County Comprehensive Floodplain Management Plan Repetitive Loss Area Analysis (2021)	Analyzes Repetitive Los Areas within Los Angeles County and fulfills Community Rating System requirements.	Flood Land Movement	Yes
County of Los Angeles Floodplain Management Plan Progress Report (2024)	Provides an annual update on the implementation of the action plan identified in the Comprehensive Floodplain Management Plan and on the implementation and evaluation of outreach projects.	Flood Land Movement	Yes
County of Los Angeles Repetitive Loss Area Analysis Progress Report (2023)	Provide an annual update on the implementation of the action plan identified in the Repetitive Loss Area Analysis to ensure there is a continuing and responsive planning process.	Flood	Yes
Los Angeles County Fire Plan (2023)	Describes the wildfire environment, history, and pre-fire management strategies to enhance the protection of lives, property, and natural resources from wildland fire.	Wildfire	Yes

Authority, Policy, or Resource	Description	Hazards Addressed	Potential to Affect Development
Los Angeles County 2045 Climate Action Plan (2024)	Delineates the County's path toward meeting the goals of the Paris Agreement and achieving carbon neutrality for unincorporated Los Angeles County.	Wildfire Extreme Heat Drought Flooding	Yes
Our County: Los Angeles Countywide Sustainability Plan (2019)	Outlines how local governments and stakeholders can enhance the well-being of all County communities while adapting to climate change and reducing damage to the natural environment, particularly focusing on communities disproportionately burdened by pollution.	Wildfire Extreme Heat Drought Flooding	Yes
Los Angeles County Floodplain Management Ordinance	Aims to minimize public and private losses resulting from flood conditions via uniformly applied regulations in flood prone, mudflow, or flood related erosion areas.	Flood Land Movement	Yes
Los Angeles County Code – Title 32: Fire Code	To build a new structure (or an addition equal to or greater than 50% of existing square footage), the Los Angeles County Fire Code requires review of its location, type of construction, topography, slope, amount and arrangement of vegetation, and overall site	Wildfire	Yes

Authority, Policy, or Resource	Description	Hazards Addressed	Potential to Affect Development
	settings—in order to create defensible space necessary for effective fire protection of homes in High Fire Severity Zones.		
Los Angeles County Code – Title 22: Planning and Zoning	Establishes the regulations governing land use and development and defines zoning for unincorporated Los Angeles County. Includes the Hillside Management Area Ordinance (Chapter 22.104), the Residential Design Standards Ordinance, and the Hillside Design Guidelines. These include requirements for development in Hillside Management Areas, which are defined as areas with 25% or greater natural slopes. The guidelines include specific and measurable design techniques that can be applied to residential, commercial, industrial, and other types of projects.	Wildfire Earthquake Land Movement	Yes
Los Angeles County Code – Title 31: Green Building Standards Code	Enhances the design and construction of buildings via building concepts with positive (or reduced negative) environmental impacts, and encourages sustainable construction practices	Extreme Heat Drought	Yes

Authority, Policy, or Resource	Description	Hazards Addressed	Potential to Affect Development
	across planning and design, energy efficiency, water conservation, material and resource efficiency, and environmental air quality.		
Los Angeles County Brush Clearance Program	Legally declares both improved and unimproved properties a public nuisance, and where necessary, requires the clearance of hazardous vegetation thereby creating defensible space for effective fire protection of property, life, and the environment. The Brush Clearance Program is a joint effort between the County of Los Angeles Fire Department and the County of Los Angeles Department of Agricultural Commissioner/Weights and Measures, Weed Hazard, and Pest Abatement Bureau (Weed Abatement Division).	Wildfire	Yes
Los Angeles County Code – Title 26: Building Code	Provides minimum standards to regulate the design, construction, installation, quality of materials, use, occupancy, location, and maintenance of all buildings, structures, grading, and certain equipment. Regulates construction	Earthquake Wildfire	Yes

Authority, Policy, or Resource	Description	Hazards Addressed	Potential to Affect Development
	near a known active earthquake fault (Chapter 1, Section 113), the materials and construction methods for construction in a Wildland-Urban Interface (WUI) Fire Area (Chapter 7A), structural design as it relates to earthquake hazards (Chapter 16, Section 1613), repair of certain buildings in High Earthquake Damage Areas (Chapter 94), earthquake hazard reduction for concrete tilt-up buildings (Chapter 95) and unreinforced masonry buildings (Chapter 96), among others. The Building Code also includes provisions for emergency housing during a proclaimed emergency.		

7.3.2 Human and Technical Resources

Existing human and technical resources across County Departments enable the County to plan, manage, conduct, and execute its wide range of hazard mitigation activities. The resources below represent a high degree of expertise in all facets of hazard mitigation available to support mitigation activities. The County aims to expand and improve upon these identified capabilities by expanding potential hazard training opportunities available to the Los Angeles County Operational Area. Additionally, as various special events are scheduled in Los Angeles County over the next five years, the County should seek to expand coordination and technical resources related to mass violence, cyber, and other special event-related hazards.

Table 7-3 provides an overview of existing capabilities related to human and technical resources.

Table 7-3 Human and Technical Resources

Resource	Department/Agency	Principal Activities Related to Hazard Mitigation
Emergency Management Coordinator(s)	Los Angeles County Office of Emergency Management	• Maintains and updates the Los Angeles County Operational Area Emergency Operations Plan and Los Angeles County All-Hazard Mitigation Plan. • Coordinates local response and recovery activities in the Emergency Operation Center and in the field. • Works closely with local, state, and federal partners to support planning, training, exercise, public information, and resource coordination.
Engineer(s), Building Inspector(s), Code Enforcement Officer(s), Fire Marshalls, and Other Technical Staff	Los Angeles County Public Works and Fire Department	• Oversees the effective, efficient, fair, and safe enforcement of County of Los Angeles Building and Fire Codes.
Engineer(s), Construction Project Managers, and Other Technical Staff	Los Angeles County Public Works	• Provides direct (or contract) civil, structural, and mechanical engineering services, including contract, project, and construction management.
Engineer(s), Project	Los Angeles County Public Works	• Maintains and operates a wide range of local equipment and facilities and assists members of the public by

Resource	Department/Agency	Principal Activities Related to Hazard Mitigation
Manager(s), Equipment Operators, Maintenance and Construction Staff, and Other Technical Staff		providing sufficient clean fresh water, reliable sewer services, street maintenance, storm drainage systems, street cleaning, streetlights, and traffic signals.
Floodplain Administrator	Los Angeles County Public Works	• Enforces the floodplain management ordinance ensuring that development proposals do not increase flood risk and that new developments are not located below the 100-year flood level. In addition, the floodplain administrator is responsible for planning and managing flood risk reduction projects throughout Los Angeles County.
Planner(s), Engineer(s), and Technical Staff	Los Angeles County Department of Regional Planning	• Develops and maintains the Los Angeles County General Plan, including the Safety Element. • Develops area plans based on the Los Angeles County General Plan to provide more specific guidance for the development of more specific areas. • Reviews proposed development, capital improvements, and other physical projects involving property for consistency and conformity with the Los Angeles County General Plan. • Anticipates and acts on the need for applicable new plans, policies, and code changes.

Resource	Department/Agency	Principal Activities Related to Hazard Mitigation
		• Applies the approved plans, policies, code provisions, and other regulations to proposed land uses.
Procurement Services Manager	Los Angeles County Internal Services Department	• Provides a full range of municipal financial services and administers several licensing measures.
Comptroller Personnel	Los Angeles County Auditor – Controller	• Provides financial and grant services.
County Counsel Personnel	Los Angeles County Counsel	• Provides legal services for the County.
Fire Department Personnel	Los Angeles County Fire Department	• Provides fire protection services including response, fire prevention, and mitigation activities for the County.
Sheriff's Department Personnel	Los Angeles County Sheriff's Department	• Provides law enforcement services in the County.

7.3.3 Financial Resources and Programs

There are many existing financial resources, grant programs, and other funding mechanisms that enable current and future hazard mitigation activities. Sources for these resources and programs vary widely from local funding out of the County's General Fund to state and federal programs that aim to help local jurisdictions accomplish their hazard mitigation goals. The amount of funding available is variable and project-specific for many of these programs. Similarly, grant awards are based on the specific projects that are identified as the basis for the grant application. Table 7-4 provides an overview of existing capabilities related to financial resources and programs.

Table 7-4 Financial Resources and Programs

Resource or Program	Administrator	Purpose
General Fund	Chief Executive Office	Program operations and specific projects.
General Obligation Bonds	Auditor - Controller	General obligation bonds are appropriately used for the construction and/or acquisition of improvements to real property broadly available to residents and visitors. Such facilities include but are not limited to: libraries, hospitals, parks, public safety facilities, and cultural and educational facilities.
Special Tax and Revenue Bonds	Controller	Revenue bonds are used to finance capital projects that: 1. Have an identified budgetary stream for repayment (e.g., specified fees, tax receipts); 2. Generate project revenue but rely on a broader pledge of general fund revenues to reduce borrowing costs; or 3. Finance the acquisition and installation of equipment for the local jurisdiction's general governmental purposes.
Vegetation Management Program	Cal FIRE	Cost-sharing program between Cal FIRE and private landowners, which focuses on the use of prescribed fire and/or mechanical means, for addressing wildland fire fuel hazards and other resource management issues on State Responsibility Area (SRA) lands.
Wildfire Emergency and Mitigation Funds	Cal FIRE	Administers funding from FEMA, Bureau of Land Management, and U.S. Forest Service for

Resource or Program	Administrator	Purpose
		certain types of wildfire emergency and mitigation funding.
California Residential Mitigation Program	California Earthquake Authority	Created by the California Earthquake Authority and the Governor's Office of Emergency Services, "Earthquake Brace + Bolt: Funds to Strengthen Your Foundation" is the first incentive program offered by the California Residential Mitigation Program.
Public Health Emergency Preparedness Cooperative Agreement	Center for Disease Control and Prevention	Funds are intended to upgrade state and local public health jurisdictions' preparedness and response to bioterrorism, outbreaks of infectious diseases, and other public health threats and emergencies.
Hazard Mitigation Grant Program (HMGP)	FEMA	Administered by the California Governor's Office of Emergency Services (Cal OES), HMGP supports pre- and post-disaster mitigation plans and projects available to California communities after a presidentially declared disaster has occurred in California.
Pre-Disaster Mitigation (PDM) Grant Program	FEMA	Available annually as a nationally competitive Cal OES grant, the PDM Grant Program supports pre-disaster mitigation plans and projects.
Flood Mitigation Assistance (FMA) Grant Program	FEMA	Available annually as a nationally competitive Cal OES grant, the PDM Grant Program supports pre-disaster mitigation plans and projects.
Homeland Security	FEMA	Builds and sustains preparedness technical assistance activities in support of the four

Resource or Program	Administrator	Purpose
Preparedness Technical Assistance Program		homeland security mission areas (i.e., prevention, protection, response, recovery) and homeland security program management.
Assistance to Firefighters Grant Program	FEMA/U.S. Fire Administration	Provides equipment, protective gear, emergency vehicles, training, and other resources needed to protect the public and emergency personnel from fire and related hazards. Available to fire departments and nonaffiliated emergency medical services providers.
Land and Water Conservation Funds	U.S. Department of the Interior	Supports the protection of federal public lands and waters and voluntary conservation on private land.
Community Action for a Renewed Environment	U.S. Environmental Protection Agency (EPA)	Offers means by which communities may organize/take action to reduce toxic pollution (e.g., in stormwater, etc.) through financial and technical assistance. Communities create partnerships that implement solutions to reduce releases of toxic pollutants and that minimize toxic exposures.
Clean Water State Revolving Fund	EPA	A loan program that provides low-cost financing to eligible entities on state and tribal lands for water quality projects, including all types of non-point source, watershed protection or restoration, estuary management projects, and more traditional municipal wastewater treatment projects.

Resource or Program	Administrator	Purpose
Community Block Grant Program Entitlement Communities Grants	U.S. Department of Housing and Urban Development	Acquisition of real property, relocation and demolition, rehabilitation of residential and non-residential structures, construction of public facilities and improvements (e.g., water/sewer facilities, streets, neighborhood centers, etc.), and the conversion of school buildings for eligible purposes.
High Hazard Potential Dams (HHPD) Grant Program	FEMA	Provides technical, planning, design, and construction assistance in the form of grants for the rehabilitation of eligible high hazard potential dams.
State and Local Cybersecurity Grant Program	FEMA	Provides funding to eligible entities to address cybersecurity risks and threats to information systems owned or operated by, or on behalf of, state, local, or tribal governments.

7.3.4 Education and Outreach Resources

Engagement with the communities of Los Angeles County is an important component of mitigation efforts. The County of Los Angeles has multiple methods, formats, and venues to conduct outreach with community members and provide education on the hazard landscape in Los Angeles County. These activities ensure mitigation efforts align with community goals and include community input. Table 7-5 shows a list of existing resources for education and outreach.

Table 7-5 Education and Outreach Resources

Resource or Program	Agencies Potentially Involved	Purpose
Preparedness Fairs	Office of Emergency Management, Fire Department, Sheriff's Department, Public Works, Board of Supervisors	Engage with community members to provide education on hazards found in Los Angeles County and emergency preparedness for homes and businesses.
Personal Disaster Impact Surveys	Office of Emergency Management	Receive input and feedback on the hazard landscape from community members in Los Angeles County to inform the 2025 AHMP.
AHMP Draft Review Surveys	Office of Emergency Management	Receive input and feedback on sections of the AHMP from community members in Los Angeles County.
Homeless Outreach Services Team (HOST)	Sheriff's Department, Homelessness Services Organizations	Conduct outreach to People Experiencing Homelessness in areas prone to wildfires or flooding based on weather conditions.
Community Emergency Response Teams (CERT)	Fire Department	Educate community members about disaster preparedness and response in their communities.
Explorer Programs	Fire Department, Sheriff's Department	Educate youth about disaster preparedness and response in their communities.
Youth Climate Commission	Chief Sustainability Office	Educate and obtain input from youth on climate change impacts and mitigation efforts.

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7.3.5 National Flood Insurance Program Participation

The National Flood Insurance Program (NFIP) is administered by FEMA and provides affordable flood insurance to participating communities through a network of insurance providers. NFIP regulations must be enforced in Special Flood Hazard Areas (SFHAs). Flood insurance is required for structures in SFHAs with federally backed loans (e.g., most mortgages, Small Business Administration (SBA) loans) and FEMA grants along with any structures with SBA loans, regardless of flood zone. Flood insurance is required to be maintained for the life of the federally backed loan and in perpetuity, regardless of change in ownership, in the case of FEMA grants.

The Los Angeles County Board of Supervisors adopted the County Floodway Ordinance (Los Angeles County Code Title 11, Chapter 11.60) in March 1980. This ordinance included the first County Floodway Maps and paved the way for the County to begin participation in NFIP on behalf of unincorporated residents. The County's participation means that residents (owners and renters) in the unincorporated communities within Los Angeles County are eligible for NFIP flood insurance and Federal flood disaster assistance. The first FEMA Flood Insurance Rate Maps (FIRMs) became effective on December 2, 1980. Since 1980, the County has continued robust participation in NFIP. The FEMA FIRMs were digitized in September 2008 and have been revised over the years by numerous Letters of Map Change and by large-scale Physical Map Revisions for the Ballona Creek watershed and several watersheds in the Santa Monica Mountains (Triunfo Creek, Topanga Canyon and others) in December 2018, the Los Angeles County coastline in April 2021, and the Santa Clara River watershed in June 2021. These maps are available to the public on the Los Angeles County Public Works (PW) website at dpw.lacounty.gov/floodzone.

Los Angeles County also participates in the NFIP's Community Rating System (CRS) program. The CRS program is a voluntary program for communities that engage in community floodplain management activities, which exceed the minimum NFIP standards. CRS communities benefit from a discount on flood insurance rates and improved floodplain management programs. CRS uses a class rating system between 1 and 9 to determine flood insurance premium reductions for residents. As of April 1, 2022, Los Angeles County is a Class 6 CRS community; therefore homeowners and

renters who live in a SFHA can receive up to a 20% discount on their flood insurance policies.

The County's implementation and enforcement of local floodplain management regulations for development in SFHAs are covered in Los Angeles County Building Codes with the most recent update completed in 2023. Title 26, Chapter 1, includes requirements for development within flood hazard areas. Other relevant ordinances include other chapters in Title 26 (Building Code) along with Titles 27 (Electrical Code), Title 28 (Plumbing Code), Title 29 (Mechanical Code), Title 30 (Residential Code), and Title 33 (Existing Building Code). Implementation and enforcement are also covered in the Los Angeles County Subdivision Code (Title 21) and Planning and Zoning Code (Title 22). The NFIP for unincorporated communities is administered by the Department of Public Works (LACPW) Stormwater Engineering Division, which serves as the County's floodplain manager, coordinates with LACPW's Building and Safety and Land Development Divisions and with the Los Angeles County Department of Regional Planning in their enforcement of the County's floodplain management regulations, and participates in FEMA's Community Assisted Visits, which typically occur on a 5-year cycle.

LACPW continues to enforce NFIP regulations for building permit applications determined by Building and Safety officials to be substantial improvement or repair of substantial damage. Los Angeles County also requires all residential buildings undertaking substantial improvement to have their lowest floor elevated 1 foot above the 100-year flood elevation. Additionally, Los Angeles County conducted a Repetitive Loss Area Analysis in 2020, which serves as a specific plan for reducing damage from flooding in repetitive loss areas.

After an event, Public Works staff assess the unincorporated area buildings within the extent of the event. The assessment will identify the buildings that appear to have damages affecting 50 percent or greater of the building. If such a building is in flood-prone areas identified by FEMA's Flood Insurance Rate Maps, County maps (Floodway Maps or Assessor's Maps), or identified by Public Works to be in a Repetitive Loss Area, will undergo further evaluation by Public Works staff on whether the building meets FEMA's definition of substantial improvement/substantial damage (SI/SD). A building that meets FEMA's SI/SD definition will be required to have the entire building upgraded to meet National Flood Insurance Program (NFIP) standards (Title 44, Code

of Federal Regulations, Section 60.3). Los Angeles County Code Title 26, Section 110.1 requires the County to enforce as a minimum the current Federal Flood Plain Management Regulations defined in Title 44, Code of Federal Regulations, Section 60.3, for buildings, structures, and grading located in whole or in part in flood hazard areas. (Ord. 2013-0048 § 2, 2013; Ord. 2010-0053 § 2, 2010; Ord. 95-0065 § 3 (part), 1995.)

7.4 Identification and Analysis of Mitigation Strategies

Potential mitigation actions were identified for each hazard identified in Section 6 in an effort to ensure as comprehensive a mitigation strategy as possible. Multiple mitigation options were then analyzed against the goals and objectives delineated in this section with a focus on new and existing buildings. A combination of new and ongoing mitigation actions aimed at reducing the effects of the identified hazards were compiled into the list of mitigation actions in the following subsection. This list includes a wide range of potential types of mitigation actions, including:

- Local Plans and Regulations.
- Structure and Infrastructure Projects.
- Natural Systems Protection.
- Education and Awareness Programs.

A notable update to the 2025 AHMP was the integration of human-caused threats and corresponding potential mitigation actions. The AHMP Planning Team also reviewed FEMA's Mitigation Ideas document to incorporate national best practices in the list of potential mitigation actions.

7.4.1 Mitigation Strategies

01	*Title:* **Support and Expand Countywide Vegetation Management and Fire Prevention Efforts**
Source: Los Angeles County Fire Department	
Type: Natural Systems Protection	
Description: Conduct passive protection measures such as creating defensible space buffers around residential and non-residential structures through the removal of flammable vegetation, managing and/or reducing hazardous fuels, creating firebreaks, fire-resistive landscaping and construction, and clearing dead vegetation, among others. Engage indigenous communities to inform vegetation management and fire prevention practices aligned with Traditional Ecological Knowledge (TEK).	*Hazard:* **Wildfire** *Hazard:* ***Severe Wind/Tornado***

02	*Title:* **Enhance Community Engagement in Wildfire Protection and Prevention**
Source: Los Angeles County Department of Regional Planning	
Type: Education and Awareness Programs	
Description: Engage residents and businesses in high fire risk communities to educate them on community-focused mitigation and risk reduction strategies, emergency preparedness and evacuation readiness, and opportunities to get involved in fire safety-related community initiatives. Engage indigenous communities to inform protection and prevention practices aligned with Traditional Ecological Knowledge (TEK).	*Hazard:* **Wildfire** *Hazard:* ***Severe Wind/Tornado***

03	*Title:* **Perform Post-Fire Flooding, Debris Flow, and Mud Flow Risk Assessments and Mitigation Activities**
Source: Los Angeles County Department of Public Works	
Type: Structure and Infrastructure Projects	
Description: Following a wildfire, assess burn scar for significant mud and debris flow risks to produce mud and debris flow phase maps for first responding agencies to prepare for potential evacuations. Recommend mitigation strategies to prevent mud and debris flow impacts.	*Hazard:* **Wildfire** *Hazard:* ***Flooding***

04	*Title:* **Strengthen Operational Continuity Capabilities for Critical Facilities**
Source: Los Angeles County Department Public Health, among others.	
Type: Structure and Infrastructure Projects	
Description: Conduct robust continuity planning to ensure the continued performance of essential functions in the event critical facilities are impacted by various hazards. Build capabilities that support operational continuity such as alternate or uninterrupted power supply, workforce development and cross-training, emergency communications, and data backup or failover hardware.	*Hazard:* **Wildfire** *Hazard:* ***Extreme Heat*** *Hazard:* ***Severe Wind/Tornado*** *Hazard:* **Cyber Incidents**

05	*Title:* **Incorporate Hazards in Local Planning, Land Use, and Development Codes**
Source: Los Angeles County Department of Public Works and Regional Planning	
Type: Local Planning and Regulations	
Description: Develop, maintain, and leverage opportunities to strengthen relevant ordinances that govern land use, building codes, and development in high-risk hazard areas. Incorporate mitigation actions in community planning such as Community Wildfire Plans, Flood Management Plans, and the County General Plan, among many others.	*Hazard:* **Wildfire** *Hazard:* **Earthquake** *Hazard:* ***Land Movement*** *Hazard:* ***Severe Wind/Tornado*** *Hazard:* ***Flooding***

06	*Title:* **Increase Public Awareness of Climate Change Effects on Local Hazards**
Source: Los Angeles County Chief Sustainability Office	
Type: Education and Awareness Programs	
Description: Engage with communities on ways climate change impacts various natural hazards along with mitigation actions and available resources for climate adaptation and resilience. Efforts should focus on how communities can take action or support existing County programs including funding available to the public. Public engagement efforts should be accessible, ensure people with Access and Functional Needs are included in outreach, and use materials with multiple language options.	*Hazard:* **Wildfire** *Hazard:* **Extreme Heat** *Hazard:* **Drought** *Hazard:* **Land Movement** *Hazard:* ***Severe Wind/Tornado*** *Hazard:* **Flooding**

07	*Title:* **Expand Stormwater Management, Drainage, and Outlet Planning**
Source: Los Angeles County Department of Public Works	
Type: Local Planning and Regulations	
Description: Continue robust stormwater management programs. Conduct studies to inform measures to improve outlet and drainage planning and prevent flood damage to communities in high-risk areas. These efforts should also prevent flood damage to County-maintained roadways, including evacuation egress and emergency services ingress, while supporting potential groundwater recharge.	*Hazard:* **Flooding** *Hazard:* **Drought** *Hazard:* **Transportation Incident**

08	*Title:* **Construct and Maintain Localized Flood Control Improvements**
Source: Los Angeles County Department of Public Works	
Type: Structural and Infrastructure Projects	
Description: Maintain existing flood control mechanisms by drainage system maintenance, sediment and debris clearance, and other actions. Leverage opportunities to construct flood control improvements.	*Hazard:* **Flooding**

09	*Title:* **Preserve Floodplains as Public Use Open Spaces**
Source: Los Angeles County Department of Public Works, among others.	
Type: Natural Systems Protections	
Description: Preserve and expand public use open spaces that capture stormwater with the aim of reducing localized flooding while also providing green space and recreational opportunities to communities. Prioritize floodplains and watersheds in County-owned public use open spaces near flood risk areas. Use stormwater best management practices in projects involving open spaces to support natural water collection and conservation. Incorporate floodplain preservation into future park improvements.	*Hazard:* **Flooding**

10	*Title:* **Harden Critical Facilities and Infrastructure from Seismic Damage**
Source: Los Angeles County Department of Public Works	
Type: Structure and Infrastructure Projects	
Description: Conduct seismic assessments to prioritize retrofitting and other seismic mitigation actions such as bracing or seismic shutoff valves. Efforts should focus on critical facilities for community lifelines such as hospitals, public safety facilities, utility sites, high-hazard potential dams, and transportation assets (i.e., bridges, roadways, airports, and others).	*Hazard:* **Earthquake** *Hazard:* ***Land Movement*** *Hazard:* **Dam Failure**

11	*Title:* **Prevent Impacts to the Transportation System**
Source: Los Angeles County Department of Public Works	
Type: Structure and Infrastructure Projects	
Description: Hazard impacts to the transportation system in Los Angeles County have far-reaching potential for cascading effects across multiple lifelines. Mitigation activities for multiple hazards should focus on preventing or lessening impacts to transportation. Activities may include stabilization efforts along County-maintained roads, reinforcing transportation assets, or other seismic mitigation actions.	*Hazard:* **Earthquake** *Hazard:* ***Land Movement*** *Hazard:* **Transportation Incident**

12	*Title:* **Continue Efforts to Enhance Dam Safety and Reduce Long-Term Vulnerabilities with High Hazard Potential Dams**
Source: Los Angeles County Department of Public Works	
Type: Structure and Infrastructure Projects	
Description: Upgrade infrastructure to ensure the long-term integrity and safe operation of County-owned dam facilities. Potential actions could include strengthening of dams, sediment management activities, regular inspections, continuous maintenance, integrating advanced technologies, and emergency preparedness efforts.	*Hazard:* **Earthquake** *Hazard:* **Dam Failure**

13	*Title:* **Assess Water Resilience in Los Angeles County**
Source: Los Angeles County Department of Public Works	
Type: Local Planning and Regulations	
Description: Conduct assessments and studies to monitor the water supply and develop recommendations for other water systems. Identify potential secondary water sources or other contingency measures for ensuring water system resilience during drought conditions.	*Hazard:* **Drought**

14	*Title:* **Expand Drought-Tolerant Landscaping and Design**
Source: Los Angeles County Chief Sustainability Office and Department of Regional Planning	
Type: Natural Systems Protection	
Description: Integrate drought mitigation into landscaping and design measures undertaken by the County. Prioritize native and drought-tolerant plants when selecting landscaping designs. Use permeable materials for pavers, driveways, walkways, and roadways to reduce runoff and promote groundwater recharge that incorporate indigenous- informed practices aligned with Traditional Ecological Knowledge (TEK).	*Hazard:* **Drought**

15	*Title:* **Address Urban Heat Islands by Investing in Green Infrastructure and Cooling Strategies**
Source: Los Angeles County Chief Sustainability Office, Department of Regional Planning, Department of Economic Opportunity, Department of Public Health, and Department of Public Works, among others.	
Type: Local Planning and Regulations	
Description: Increase shade cover provided by vegetation such as planting native and drought-tolerant trees along with smaller plants such as shrubs, grasses, and groundcover. Increase the tree canopy in County parks and open concrete or asphalt spaces in the public right of way or County-owned parking lots. Conduct assessments to identify communities considered urban heat islands that are at highest need for an increase in tree canopy or other heat mitigation activities. Advance cooling strategies such as constructing shade structures, installing splash pads, operating cooling centers, modernizing air conditioning systems, and expanding the availability of cool roofing infrastructure that reflects heat away from buildings. Ensure mitigation actions address heat impacts faced by people with Access and Functional Needs. Many of these actions have a secondary benefit mitigating the effects of climate change by promoting carbon sequestration, the capture and storage of CO2 from the atmosphere. Additionally, increasing green space and shade cover in urban areas can advance environmental justice.	*Hazard:* ***Extreme* Heat**

16	*Title:* **Increase Coastal Resilience, Prevent Erosion, and Protect Shorelines**
Source: Los Angeles County Chief Sustainability Office and Department of Beaches and Harbors	
Type: Natural Systems Protection	
Description: Conduct activities to replace sediment lost due to erosion or coastal storms. Assess the need for other sediment protection measures such as planting certain types of vegetation. Consider activities that prevent wind from blowing sand off beaches and impacts from storm surge in high-risk areas. These actions help protect coastal roadways and other infrastructure along with ensuring recreation opportunities remain for residents and visitors.	*Hazard:* **Flooding** *Hazard:* **Tsunami**

17	*Title:* **Conduct Multi-Discipline Training and Exercise Programs**
Source: Los Angeles County Sheriff's Department and Office of Emergency Management	
Type: Education and Awareness Programs	
Description: Identify opportunities for joint training and exercises for mass violence and cyber incident response across disciplines of law enforcement, fire and emergency medical services, medical examiner, private sector, and others. Each training and exercise should include mass violence rescue and evacuation techniques for AFN populations.	*Hazard:* **Mass Violence** *Hazard:* **Cyber Incidents**

18	*Title:* **Strengthen Partnerships and Coordination Among Local Agencies**
Source: Los Angeles County Sheriff's Department and Office of Emergency Management	
Type: Education and Awareness Programs	
Description: Expand collaborative agreements with other agencies to share resources during large-scale emergencies. Strengthen partnerships with local agencies for resource sharing. Enhance response capabilities during major incidents.	*Hazard:* **Mass Violence** *Hazard:* **Cyber Incidents**

19	*Title:* **Incorporate Mass Violence Prevention and Mitigation Efforts into Special Event Planning**
Source: Los Angeles County Sheriff's Department and Office of Emergency Management	
Type: Education and Awareness Programs	
Description: Use physical security measures such as bollards, water-filled barricades, vehicle barriers, and others. Identify mitigation measures for upcoming special events such as the World Cup, Super Bowl, and Olympics. Conduct special event training on topics such as crowd management, sporting event safety, and stadium evacuation. Incorporate Family Assistance Center readiness into special event planning.	*Hazard:* **Mass Violence**

20	*Title:* **Extreme Heat Risk Education and Safety Outreach for Residents and Vulnerable Workers**
Source: Los Angeles County Chief Sustainability Office, Department of Economic Opportunity, Department of Public Health, and Department of Public Works	
Type: Education and Awareness Programs	
Description: Implement outreach and education to workers in low-wage and high hazard industries in LA County that are disproportionately impacted by extreme heat. Partner with organizations providing services to people with Access and Functional Needs on heat response strategies. Expand awareness of cooling centers and other heat respite options for unhoused populations. Increase workforce development opportunities to expand the availability of green infrastructure.	*Hazard:* ***Extreme* Heat**

21	*Title:* **Increase Field Response and Coordination Capabilities**
Source: Los Angeles County Sheriff's Department and Office of Emergency Management	
Type: Education and Awareness Programs	
Description: Enhance field coordination capabilities at large-scale planned events and no-notice incidents such as wildfires, mass violence, and others. Potential actions could include investments in new redundant communications systems, response vehicles, alert and warning capabilities, and other field operations equipment.	*Hazard:* **Wildfire** *Hazard:* **Mass Violence**

22	*Title:* **Strengthen Public Health Prevention and Preparedness Measures**
Source: Los Angeles County Office of Emergency Management, Department of Public Health, Department of Health Services, and Fire Department	
Type: Education and Awareness Programs	
Description: Continue and expand mass vaccination and immunization efforts. Coordinate healthcare surge preparedness and response efforts. Conduct disease surveillance, monitor early warning systems, and coordinate outbreak response. Educate communities and businesses about health implications related to wildfire recovery and hazardous materials. Liaise with health system partners to understand hospital surge capacity within the County. Maintain and deploy emergency stockpiles. Incorporate potential climate change-related infectious disease implications into public health preparedness planning.	*Hazard:* **Public Health Emergencies**

7.5 Status of Previous Mitigation Efforts

Table 7-6 below shows the status of mitigation strategies described in the 2020 AHMP. Departments have made significant progress on some of these mitigation strategies, partially but not fully completing some of these efforts. As such, each strategy from the 2020 AHMP have been rolled into the mitigation strategies described in this section.

Table 7-6 Status of Mitigation Efforts

2020 AHMP Strategy	Status	2025 AHMP Strategy
Red Flag Warning Public Outreach	Not Completed/ Ongoing	Enhance Community Engagement in Wildfire Protection and Prevention

2020 AHMP Strategy	Status	2025 AHMP Strategy
Vegetation Management Program	Not Completed/ Ongoing	Support and Expand Countywide Vegetation Management and Fire Prevention Efforts
Fireproof Coating of Critical Facilities	Not Completed/ Ongoing	Enhance Community Engagement in Wildfire Protection and Prevention
Auxiliary Power for Critical Facilities	Not Completed/ Ongoing	Strengthen Operational Continuity Capabilities for Critical Facilities
Earthquake-Resistant Ductile Iron Pipes Replacement	Not Completed/ Ongoing	Harden Critical Facilities and Infrastructure from Seismic Damage
Watershed Ecosystem Restoration	Not Completed/ Ongoing	Preserve Floodplains as Public Use Open Spaces
Green Streets / Living Streets	Not Completed/ Ongoing	Expand Drought-Tolerant Landscaping and Design
Coordinated Data Collection and Database Systems	Not Completed/ Ongoing	Strengthen Partnerships and Resource Coordination Among Local Agencies
Brush Clearance Program	Not Completed/ Ongoing	Support and Expand Countywide Vegetation Management and Fire Prevention Efforts
Wildland Urban-Interface Ordinance	Not Completed/ Ongoing	Incorporate Hazards in Local Planning, Land Use, and Development Codes
Urban Forest Management Plan	Not Completed/ Ongoing	Address Urban Heat Islands by Investing in Green Infrastructure and Cooling Strategies

2020 AHMP Strategy	Status	2025 AHMP Strategy
Community Wildfire Protection Plans	Not Completed/ Ongoing	Incorporate Hazards in Local Planning, Land Use, and Development Codes
Pre-Disaster Professional Support	Not Completed/ Ongoing	Strengthen Operational Continuity Capabilities for Critical Facilities
Fuel Trailer Project	Not Completed/ Ongoing	Strengthen Operational Continuity Capabilities for Critical Facilities

7.6 Prioritization and Implementation of Mitigation Actions

Potential mitigation actions were prioritized using the FEMA National Risk Index (NRI) score and information from the 2024 Los Angeles Threat and Hazard Identification and Risk Assessment (THIRA), which both address hazards by frequency, severity, and impact. Both the NRI and THIRA follow established processes and use a standardized risk assessment methodology. The NRI incorporates multiple variables including physical impacts posed by hazards in addition to social vulnerability data that communicates risks specific to a certain community. Table 7-7 provides an overview of the NRI results for Los Angeles County across 18 hazards. Hazards rated as Relatively Low, Not Applicable, or No Rating were not included in this AHMP as they are uncommon in frequency in Los Angeles County; all other hazards are covered in this plan.

Table 7-7 FEMA National Risk Index Hazards

Hazard	NRI Score (out of 100.0)	Score Description	Covered in Plan?
Earthquake	100.0	Very High	Yes | Section 6.3
Wildfire	99.9	Very High	Yes | Section 6.2
Extreme Heat	98.4	Relatively High	Yes | Section 6.4
Tornado	97.6	Relatively High	Yes | Section 6.10

Hazard	NRI Score (out of 100.0)	Score Description	Covered in Plan?
Landslide	96.3	Relatively High	Yes | Section 6.8
Lightning	95.0	Relatively High	Yes | Section 6.2/ 6.6
Riverine Flooding	90.8	Relatively Moderate	Yes | Section 6.6
Drought	73.8	Relatively Moderate	Yes | Section 6.5
Strong Wind	73.5	Relatively Moderate	Yes | Section 6.10
Tsunami	63.5	Relatively Moderate	Yes | Section 6.10
Winter Weather	48.6	Relatively Low	Not Prioritized
Hail	48.1	Relatively Low	Not Prioritized
Coastal Flooding	43.3	Very Low	Not Prioritized
Avalanche	33.7	Very Low	Not Prioritized
Cold Wave	0.0	No Rating	Not Prioritized
Hurricane	N/A	Not Applicable	Not Prioritized
Ice Storm	N/A	Not Applicable	Not Prioritized
Volcanic Activity	N/A	Not Applicable	Not Prioritized

The THIRA is a process that communities undertake to assess risk and set capability targets to focus their preparedness efforts and strengthen response and recovery capabilities. There are three primary focuses of the THIRA: threat and hazard identification, impacts analyses that include the specific demographics of the community, and a description of existing response and recovery capabilities. The 2024 Los Angeles/Long Beach THIRA was reviewed as part of this hazard mitigation planning effort and all threats and hazards identified were included as part of this AHMP. Additionally, the THIRA's identification of several human-caused threats with potential to impact Los Angeles County influenced the decision to include such threats in this AHMP. Table 7-8 shows a crosswalk of the hazards and threats identified in the THIRA and their corresponding sections in this AHMP.

Table 7-8 2024 THIRA and 2025 AHMP Crosswalk

2024 THIRA Hazard/Threat Name	2025 AHMP Hazard/Threat Name	Covered in Plan?
Biological Attack	Public Health Emergencies	Yes | Section 6.14
Complex Coordinated Terrorist Attack	Mass Violence	Yes | Section 6.11
Cyber Attack	Cyber Incident	Yes | Section 6.12
Earthquake	Earthquake	Yes | Section 6.3
Flood	Flooding	Yes | Section 6.6
Pandemic – Human	Public Health Emergencies	Yes | Section 6.14
Radiological Attack	Public Health Emergencies	Yes | Section 6.14
Transportation Accident	Transportation Incident	Yes | Section 6.13
Wildfire	Wildfire	Yes | Section 6.2

Additional criteria used to prioritize potential mitigation actions also included the following components:

- Actions that prioritize equity and integrate vulnerable populations, including people with AFN.
- Potential benefits of the action to prevent a major hazard.
- Actions that have social support to build a culture and practice of resilience.
- Cost of the action versus the potential benefit to prevent a major hazard.
- Availability of funding and actions that support grant requirements.
- Political support to remedy or prevent a major health or safety hazard.
- Actions that are technically, legally, environmentally, and economically feasible.
- Actions that the County has the administrative capabilities to implement.
- Actions that are related to mitigating long-term vulnerabilities to County-owned High Hazard Potential Dams will automatically be given a HIGH priority.

7.6.1 Priority Levels

- **High-Priority Mitigation Actions:** are essential and require immediate attention to address critical risks and safeguard life, property, or essential systems.

- **Medium-Priority Mitigation Actions:** are important but less urgent, supporting overall risk reduction and resilience goals while allowing for planned implementation.
- **Low-Priority Mitigation Actions:** address lower-risk concerns or long-term objectives and can be deferred without immediate impact to safety or core functions.

7.6.2 Changes in Criteria

The 2014 Los Angeles County AHMP's Mitigation Action Matrix was prioritized using the Social, Technical, Administrative, Political, Legal, Environmental, and Economic (STAPLEE) method, which FEMA had recommended as a prioritization procedure in the early to mid-2000s. The 2020 AHMP replaced the use of STAPLEE with a more streamlined prioritization process that included the following:

- To remedy or prevent a major health/safety hazard, a mitigation project must have political support.
- To build a culture and practice of disaster resilience, a mitigation project must have social support.
- To meet FEMA HMA grant criteria, a mitigation project must be technically, legally, environmentally, and economically feasible and the jurisdiction must have the administrative capabilities to implement it.

This prioritization method used in the 2020 AHMP has been adapted and incorporated into the prioritization criteria described previously in Section 7.6.

7.7 Integration with Other Plans

The County of Los Angeles ensures that mitigation is a countywide effort with multiple departments contributing to critical activities that reduce hazard risks. These actions are captured in other discipline-specific plans in addition to the AHMP, including those listed in Table 7-9.

Table 7-9 AHMP Integration with Other Plans

Plan	Authored By	Hazard(s)	Covered in Plan?
Comprehensive Floodplain Management Plan	Los Angeles County Department of Public Works	Flood	Yes
Repetitive Loss Area Analysis Report	Los Angeles County Department of Public Works	Flood	Yes
Climate Action Plan	Los Angeles County Department of Regional Planning	Wildfire Extreme Heat Flooding Drought	Yes
Sustainability Plan	Los Angeles County Chief Sustainability Office	Wildfire Extreme Heat Flooding Drought	Yes
County Fire Plan	Los Angeles County Fire Department	Wildfire	Yes

7.8 Mitigation Action Plan

Table 7-10 represents a Mitigation Action Plan to reduce risks of the hazards identified in this AHMP. Notably, many County departments include discipline-specific mitigation actions within other related plans mentioned in the above section. Some actions that mitigate risk of natural hazards that are covered elsewhere may not be explicitly listed or may be referred to in general terms while specific details are available in other related plans.

Table 7-10 Mitigation Action Plan

Action No.	Priority	Hazard	Action Name	Potential Funding Source	Expected Time Frame	Lead Agencies
01	HIGH	**Wildfire** ***Severe Wind/Tornado***	Support and Expand Countywide Vegetation Management and Fire Prevention Efforts	HMGP	Annual	LACoFD, PW
02	HIGH	**Wildfire** ***Severe Wind/Tornado***	Enhance Community Engagement in Wildfire Protection and Prevention	HMGP	Quarterly	LACoFD, DRP, OEM, LASD
03	HIGH	**Wildfire** ***Flooding***	Perform Post-Fire Flooding, Debris Flow, and Mud Flow Risk Assessments and Mitigation Activities	HMGP, FMA	Annual	PW, LACoFD, OEM
04	HIGH	**Wildfire** ***Extreme Heat***		UASI, SHSP	Annual	OEM, PW, DPH,

Action No.	Priority	Hazard	Action Name	Potential Funding Source	Expected Time Frame	Lead Agencies
		Severe Wind/Tornado	Strengthen Operational Continuity Capabilities for Critical Facilities			LACoFD, LASD, ISD
		Cyber Incidents				
05	HIGH	**Wildfire**	Incorporate Hazards in Local Planning, Land Use, and Development Codes	HMGP, FMA	1-3 Years	DRP, PW
		Earthquake				
		Land Movement				
		Severe Wind/Tornado				
		Flooding				
06	MEDIUM	**Wildfire**	Increase Public Awareness of Climate Change Effects on Local Hazards	FMA, Prop 4	Annual	DRP, CSO, CEO
		Extreme Heat				
		Drought				
		Land Movement				
		*S****evere Wind/Tornado***				
		Flooding				

Action No.	Priority	Hazard	Action Name	Potential Funding Source	Expected Time Frame	Lead Agencies
07	HIGH	**Flooding**	Expand Stormwater Management, Drainage, and Outlet Planning	FMA	1-5 Years	PW
		Drought				
		Transportation Incident				
08	HIGH	***Flooding***	Construct and Maintain Localized Flood Control Improvements	FMA	1-5 Years	PW
09	MEDIUM	***Flooding***	Preserve Floodplains as Public Use Open Spaces	FMA, Prop 4	1-5 Years	PW, DRP, DPR
10	HIGH	**Earthquake**	Harden Critical Facilities and Infrastructure from Seismic Damage	HMGP	1-5 Years	PW, ISD
		Land Movement				
		Dam Failure				
11	MEDIUM	**Earthquake**	Prevent Impacts to the Transportation System	HMGP	1-5 Years	PW, LASD
		Land Movement				
		Transportation Incident				

Action No.	Priority	Hazard	Action Name	Potential Funding Source	Expected Time Frame	Lead Agencies
12	HIGH	**Earthquake** **Dam Failure**	Conduct Seismic Strengthening at County-Owned Dams	FMA, HHPD	1-5 Years	PW
13	MEDIUM	**Drought**	Assess Water Resilience in Los Angeles County	Prop 4	1-5 Years	PW, DRP
14	MEDIUM	**Drought**	Expand Drought-Tolerant Landscaping and Design	Prop 4	1-5 Years	DPR, DRP, PW, CSO
15	HIGH	**Extreme Heat**	Address Urban Heat Islands by Investing in Green Infrastructure and Cooling Strategies	Prop 4	1-5 Years	CSO, DRP, DEO, DPH, PW, DPR
16	HIGH	**Flooding** **Tsunami**	Increase Coastal Resilience, Prevent Erosion, and Protect Shorelines	FMA, Prop 4	1-5 Years	CSO, DBH, PW
17	HIGH	**Mass Violence** **Cyber Incidents**	Conduct Multi-Discipline Training and Exercise Programs	UASI, SHSP	1-5 Years	LASD, OEM, LACoFD
18	MEDIUM	**Mass Violence** **Cyber Incidents**	Strengthen Partnerships and Resource Coordination Among Local Agencies	UASI, SHSP	1-5 Years	LASD, OEM, LACoFD

Action No.	Priority	Hazard	Action Name	Potential Funding Source	Expected Time Frame	Lead Agencies
19	MEDIUM	**Mass Violence**	Incorporate Mass Violence Prevention and Mitigation Efforts into Special Event Planning	UASI, SHSP	1-5 Years	LASD, OEM, LACoFD
20	HIGH	**Extreme Heat**	Extreme Heat Risk Education and Safety Outreach for Residents and Vulnerable Workers	Prop 4	1-5 Years	CSO, DEO, DPH, PW, DAD
21	HIGH	**Public Health Emergencies**	Strengthen Robust Public Health Prevention and Preparedness Measures	UASI, SHSP, PHEP, HPP	1-5 Years	DPH, OEM, DHS, LACoFD
22	MEDIUM	**Wildfire** **Mass Violence**	Increase Field Response and Coordination Capabilities	UASI, SHSP	1-5 Years	LASD, OEM, LACoFD

Agency Key:
CEO = Los Angeles County Chief Executive Office
CSO = Los Angeles County Chief Sustainability Office
DAD=Los Angeles Department of Aging and Disabilities
DBH = Los Angeles County Department of Beaches and Harbors
DEO = Los Angeles County Department of Economic Opportunity
DHS = Los Angeles County Department of Health Services
DPH = Los Angeles County Department of Public Health
DPR = Los Angeles County Department of Parks and Recreation
PW = Los Angeles County Public Works
DRP = Los Angeles County Department of Regional Planning
ISD = Los Angeles County Internal Services Department
LACoFD = Los Angeles County Fire Department.
LASD = Los Angeles County Sheriff's Department
OEM = Los Angeles County Chief Executive Office - Office of Emergency Management

Grant Program Key:
FMA = Flood Mitigation Assistance
HMGP = Hazard Mitigation Grant Program
HPP = Hospital Preparedness Program
PHEP = Public Health Emergency Preparedness
SHSP = State Homeland Security Program
UASI = Urban Area Security Initiative

8 Plan Maintenance

8.1 Community Participation in Plan Maintenance

The Hazard Mitigation Plan will be reviewed regularly, acknowledging the dynamic nature of hazard landscapes and the evolving understanding of risks. Stakeholders' engagement will be prioritized throughout the development and monitoring process, fostering transparency and accountability.

To maintain transparency and community involvement, the County has outlined several measures for continued public participation:

- **Public Access to Hazard Mitigation Documents:** A copy of the 2025 AHMP will be maintained on the Los Angeles County Hazard Mitigation Program website along with contact information. Los Angeles County OEM will notify the public of any changes or updates, including mitigation projects identified in the plan as they are implemented, via social media, and traditional local media channels.
- **Annual Public Engagement Opportunities:** Los Angeles County OEM will endeavor to hold multiple in-person public engagement opportunities for hazard mitigation to keep the public informed of progress on hazard mitigation projects, obtain ongoing public feedback, and educate the public about the County's hazard mitigation efforts.
- **Online Portal:** A Los Angeles County Hazard Mitigation Program website will be established to provide the public with more information on hazard mitigation and project updates. This portal will serve as a mechanism to obtain continuous public feedback as projects are implemented and offers access to mitigation resources.
- **Standing Advisory Committee:** The Hazard Mitigation Advisory Committee will be expanded to a standing status and will meet at least once per year or more often as determined necessary to support hazard mitigation projects. The standing Hazard Mitigation Advisory Committee will be comprised of representatives from diverse community groups to provide ongoing input and oversight of hazard mitigation efforts. The standing Hazard Mitigation Advisory Committee will also serve as an important forum for future updates of the AHMP.

These activities ensure that the community remains informed and actively engaged in the plan's implementation and maintenance.

8.2 Monitoring, Evaluation, and Maintenance

To ensure the continued effectiveness of this All-Hazard Mitigation Plan (AHMP), effective monitoring and evaluation will be conducted throughout the plan implementation period. Regular assessments will monitor progress and evaluate the achievements of the intended outcomes. Performance metrics will be developed to quantify the impact of each mitigation action, allowing for data driven adjustments and refinements.

The plan will be reviewed annually to assess progress on mitigation actions. Annual review will include the following elements:

- **Annual Review Worksheets:** Every year, LA County OEM will email each member of the Hazard Mitigation Advisory Committee an Annual Review Worksheet to complete. As shown in Appendix E, the Annual Review Worksheet reflects the FEMA Local Hazard Mitigation Plan Review Tool and includes the following sections: planning process, hazard profile, risk assessment, and mitigation strategy. Each member of the Hazard Mitigation Advisory Committee will email completed worksheets back to LA County OEM to review. LA County OEM will summarize these findings and email them out to the committee. Additionally, the findings from the review worksheets will be presented to the full Hazard Mitigation Advisory Committee at its next regular meeting.
- **Mitigation Progress Project Reports:** Mitigation actions will be monitored and updated using the Mitigation Project Progress Report. During each annual review, each department or agency currently administering a mitigation project will submit a progress report to LA County OEM. For projects that are being funded by a FEMA mitigation grant, FEMA quarterly reports may be used as the preferred reporting tool. As shown in Appendix E, the progress report will discuss the current status of the mitigation project, including any changes made to the project, identify implementation problems, and describe appropriate strategies to overcome them.
- **Post-Incident Mitigation Review:** Following a major disaster event impacting Los Angeles County, a post-disaster review will be initiated by LA County OEM to evaluate the need to update the AHMP based on the circumstances of the disaster and incorporate any specific mitigation actions required due to the

incident. If LA County OEM finds that an update to the AHMP is needed, the Hazard Mitigation Advisory Committee will be convened to begin drafting the update.

8.3 Criteria for Updating the Hazard Mitigation Plan

The All-Hazards Mitigation Plan (AHMP) is required to be updated every five years in compliance with the Disaster Mitigation Act of 2000 (DMA 2000) and FEMA guidance (44 CFR § 201.6). The update process is not merely an administrative requirement but a critical mechanism to evaluate the plan's effectiveness in reducing risk and guiding mitigation strategies.

1. Review of Past Actions and Effectiveness

The update process begins with a thorough review of the mitigation actions outlined in the previous plan. This includes:

- Evaluating the implementation status of each action (completed, in progress, not started).
- Assessing the impact and effectiveness of completed actions in reducing hazard risk.
- Determining if the objectives are still relevant or require modification based on new data or circumstances.

2. Integration of New Data and Changing Conditions

- Hazard profiles and risk assessments are updated with new hazard event data, climate science, and changes in development or land use.
- Demographic shifts and infrastructure changes are reviewed to reassess vulnerability.
- Technological advancements or improved modeling tools (e.g., Hazus, National Risk Index) are incorporated to refine risk analysis.

3. Community and Stakeholder Input

The update process must actively include community participation to maintain transparency and ensure the plan reflects local priorities. This includes:

- Public workshops and surveys.
- Targeted outreach to vulnerable populations including those with Access and Functional Needs (AFN).
- Feedback from County departments, cities, NGOs, and regional partners.

4. Performance Evaluation and Metrics

To ensure effectiveness, the plan maintenance strategy includes:

- Annual progress reports that monitor implementation progress and identify barriers.
- Metrics to evaluate the reduction of risk or exposure over time.
- Documentation of lessons learned from real events and exercises to inform changes.

5. Revision of Goals, Objectives, and Actions

Based on the evaluation findings, the plan's goals and mitigation actions are revised to improve alignment with current capabilities, risk levels, and funding opportunities. Each updated action includes:

- Clear responsibilities.
- Realistic timelines.
- Evaluation metrics to measure future success.

8.4 Plan Update

The 2025 LHMP includes an updated methodology for future revisions, ensuring compliance with federal and state guidelines. A full plan update will occur every five years.

- **2030 AHMP Update Kickoff:** LA County OEM will convene the Hazard Mitigation Advisory Committee for a meeting to review the worksheet findings and endeavor to begin the process of updating the AHMP in approximately November 2028. The planning process should begin a minimum of 18 months prior to the plan's expiration. LA County OEM, in consultation with the Hazard Mitigation Advisory Committee, will develop a work plan for the update, conduct

research and review relevant documentation, determine hazards to be included in the 2030 AHMP, and begin the process to draft an updated AHMP.

- **Plan Submission and Adoption:** Once updated, the plan is submitted to Cal OES and FEMA for review. Upon conditional approval, it must be adopted by the Los Angeles County Board of Supervisors and participating jurisdictions to maintain eligibility for FEMA Hazard Mitigation Assistance (HMA) grants.

8.5 Integration with Other Plans

Los Angeles County is committed to ensuring that hazard mitigation planning is not a standalone effort, but a fully integrated component of broader County planning initiatives. By strategically weaving the goals, objectives, and actions of the All-Hazards Mitigation Plan (AHMP) into a variety of local and regional plans such as the General Plan, Capital Improvement Plans, Climate Action and Adaptation Plans, and departmental strategic plans; the County promotes a more cohesive and effective approach to building long-term resilience. This integration is achieved through ongoing collaboration with County departments, cities, and regional agencies to align land use, infrastructure development, and emergency preparedness efforts with identified hazard risks. Embedding hazard mitigation principles into existing policies and planning mechanisms ensures that they become an inherent part of decision-making processes, project funding prioritization, and long-term investment strategies ultimately reducing vulnerabilities and enhancing the resilience of communities across Los Angeles County.

The Los Angeles County AHMP will be shared across all jurisdictions within the operational area. Those jurisdictions will have the opportunity to incorporate the 2025 AHMP into their established planning process. The Hazard Mitigation Advisory Committee will assess the plan at a yearly basis, acknowledging the dynamic nature of hazard landscapes and the evolving understanding of risks. The OEM Hazard Mitigation Program will make the AHMP available for all county departments to incorporate into departmental planning efforts, and other relevant documents produced by Los Angeles County departments.

9 Plan Adoption

9.1 Plan Adoption Overview

Plan Adoption addressed Element F of the Local Mitigation Plan Regulation Checklist under single jurisdiction plan requirement.

The Los Angeles County Board of Supervisors officially adopted the 2025 All Hazard Mitigation Plan (AHMP) through a formal resolution on September 9, 2025. A scanned copy of the resolution is included in Appendix F. The Los Angeles County Office of Emergency Management (OEM) will retain the resolution for its records, while copies will be submitted to both Cal OES and FEMA.

This Plan adoption completes the mitigation planning process and department agencies, stakeholders, and community's commitment to the goals and actions. It also recognizes the current planning process and acknowledges changes from the past five years and validates the priorities for hazard mitigation actions. It makes the community eligible for certain FEMA assistance that can fund some mitigation actions.

After being adopted by the Los Angeles County Board of Supervisors, the 2025 AHMP transitions into the implementation phase. The success of the plan hinges on the integrating its mitigation strategies and actions into the local plans and policies. The mitigation action items collectively establish a robust framework to guide the County's hazard mitigation strategies over the next five years. To ensure these strategies are effective, actionable and well aligned with the county's long term resilience goals, the Planning Advisory Committee has set clear objectives. Their prioritized approach focuses on seamlessly blending mitigation actions with current policies, plans, and emphasizing collaboration and coherence throughout.

Appendices