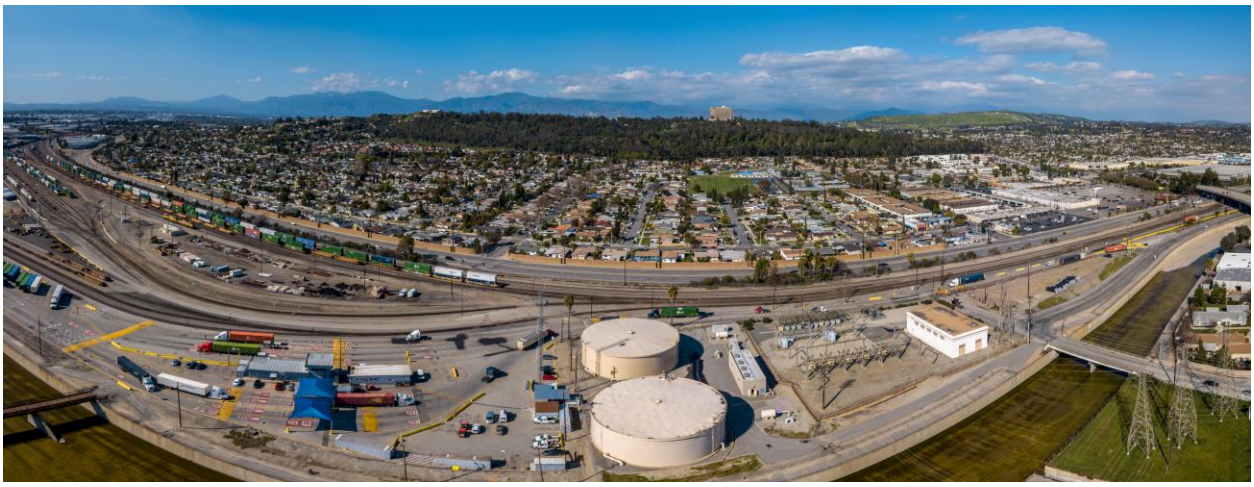
January 1, 2024 | Multi-Jurisdictional Hazard Mitigation Plan



Credits

Q&A | ELEMENT A: PLANNING PROCESS | A1-a.
Q: Does the plan document how the plan was prepared, including the schedule or time frame and activities that made up the plan's development, as well as who was involved? (Requirement 44 CFR § 201.6(c)(1)) **A:** See **Hazard Mitigation Planning Team** below.

Multi-Jurisdictional Hazard Mitigation Planning Team:

Name	Department	Position
Bellflower-Somerset Mutual Water Company		
Steve Lenton	Administration	General Manager
John Poehler	Administration	Assistant General Manager (Former)
Mike Vasquez	Operations	Superintendent
Kinneloa Irrigation District		
Tom Majich	Administration	General Manager
Martin Aragon	Administration	Office Manager
Chris Burt	Operations	Senior Facilities Operator
Michele Ferrell	Operations	Acting Senior Facilities Operator
La Puente Valley County Water District		
Paul Zampiello	Operations	Operations & Maintenance Superintendent
Pico Water District		
Joe Basulto	Administration	General Manager
Matt Tryon	Operations	Superintendent
Public Water Agencies Group		
Alix Stayton	Administration	Emergency Management Coordinator
Rowland Water District		
Tom Coleman	Administration	General Manager
Elisabeth Mendez	Administration	Compliance & Safety Manager
Dusty Moisio	Administration	Assistant General Manager
Myra Malner	Finance	Director of Finance
San Gabriel County Water District		
Jim Prior	Administration	General Manager
Casey Feilen	Administration	Assistant General Manager
South Montebello Irrigation District		
Alberto Corrales	Administration	General Manager

Jordan Betancourt	Administration	Project Engineer & Compliance Officer
Three Valleys Municipal Water District		
Kirk Howie	Administration	Chief Administrative Officer
Robert Peng	IT	IT Manager
Valencia Heights Water Company		
Dave Michalko	Administration	General Manager
Gloria Galindo	Administration	Office Manager
Walnut Valley Water District		
Erik Hitchman	Administration	General Manager
Jared Macias	Administration	Assistant General Manager

Acknowledgements

Bellflower-Somerset Mutual Water Company Board of Directors

- ✓ Rick Cook, Board President
- ✓ Leo Struiksma, Board Member
- ✓ Cheryl Harris, Board Member
- ✓ Eric Ikeda, Board Member
- ✓ Robert Wilson, Board Member

Kinneloa Irrigation District Board of Directors

- ✓ Gerrie Kilburn, Board Member
- ✓ Stephen Brown, Board Member
- ✓ Gordon Johnson, Board Member
- ✓ Timothy Eldridge, Board Member
- ✓ Vacant, Board Member

La Puente Valley County Water District Board of Directors

- ✓ Henry P. Hernandez, Board President
- ✓ William R. Rojas, Vice President
- ✓ David E. Argudo, Director
- ✓ John P. Escalera, Director
- ✓ Cesar J. Barajas, Director

Pico Water District Board of Directors

- ✓ Elpidio “Pete” Ramirez, President
- ✓ Raymond Rodriguez, Vice President
- ✓ David Angelo, Director
- ✓ Victor Caballero, Director
- ✓ David Gonzales, Director

Public Water Agencies Group Board of Directors

- ✓ Tom Coleman, Board President
- ✓ Erik Hitchman, Vice President
- ✓ Dave Michalko, Board Member
- ✓ Jose Martinez, Board Member
- ✓ Roy Frausto, Board Member
- ✓ James Lee, Board Member

Rowland Water District Board of Directors

- ✓ Szu Pei Lu-Yang, Board President
- ✓ John Bellah, Board Vice President
- ✓ Vanessa Hsu, Board Member
- ✓ Robert W. Lewis, Board Member
- ✓ Anthony J. Lima, Board Member

San Gabriel County Water District Board of Directors

- ✓ Mary Cammarano, Board President
- ✓ Charles DeLaTorre, Board Vice President
- ✓ Larry Taylor, Board Member
- ✓ Domingo Sauceda, Board Member
- ✓ Anagh Mamdapurkar, Board Member

South Montebello Irrigation District Board of Directors

- ✓ Harris Mataalii, Board President
- ✓ Darrell Heacock, Board Vice President
- ✓ Annette Sanchez, Director

Three Valleys Municipal Water District Board of Directors

- ✓ Jody Roberto, Board President
- ✓ Mike Ti, Board Vice-President
- ✓ Carlos Goytia, Board Secretary
- ✓ Bob Kuhn, Board Treasurer
- ✓ David De Jesus, Director
- ✓ Jeff Hanlon, Director
- ✓ Danielle Soto, Director

Valencia Heights Water Company Board of Directors

- ✓ Sylvia Beltran, Chairwoman
- ✓ Daniel Liese, Vice-Chairman
- ✓ Ronald Wheeler, Treasurer
- ✓ Robert Ghirelli, Secretary
- ✓ John Akerboom, Director
- ✓ Curtis Feese, Director
- ✓ Dr. Sergio Hernandez, Director

Walnut Valley Water District Board of Directors

- ✓ Edwin M. Hilden, Board President
- ✓ Theresa Lee, Board First Vice President
- ✓ Scarlett Kwong, Board Second Vice President
- ✓ Jerry Tang, Board Assistant Treasurer
- ✓ Henry Woo, Director

MJHMP Point of Contact

To request information or provide comments regarding this mitigation plan, please contact:

Name and Position Title	Mr. Tom Coleman, General Manager
Email	TColeman@rwd.org
Mailing Address	3021 Fullerton Road, Rowland Heights, CA 91748
Telephone Number	562-697-1726

Consulting Services

Emergency Planning Consultants

- ✓ Planning Director: Ms. Carolyn J. Harshman, MPA, CEM
- ✓ Planning Associate and HAZUS Specialist: Ms. Jill Caputi, CEM

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San Diego, California 92117
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www.carolynharshman.com

Mapping

The maps in this plan were provided by the Bellflower-Somerset Mutual Water Company, Kinneloa Irrigation District, La Puente Valley County Water District, Pico Water District, Public Water Agencies Group, Rowland Water District, San Gabriel County Water District, South Montebello Irrigation District, Three Valleys Municipal Water District, Valencia Heights Water Company, Walnut Valley Water District, Emergency Planning Consultants, County of Los Angeles, Federal Emergency Management Agency (FEMA), or were acquired from public Internet sources. Care was taken in the creation of the maps contained in this plan, however they are provided "as is". The District cannot accept any responsibility for any errors, omissions or positional accuracy, and therefore, there are no warranties that accompany these products (the maps). Although information from land surveys may have been used in the creation of these products, in no way does this product represent or constitute a land survey. Users are cautioned to field verify information on this product before making any decisions.

Mandated Content

In an effort to assist the readers and reviewers of this document, the jurisdiction has inserted "markers" emphasizing mandated content as identified in the Disaster Mitigation Act of 2000 (Public Law – 390). Following is a sample marker:

EXAMPLE

Q&A | ELEMENT A: PLANNING PROCESS | A1-a.
Q Does the plan document how the plan was prepared, including the schedule or time frame and activities that made up the plan's development, as well as who was involved? (Requirement 44 CFR § 201.6(c)(1)) **A:**

Table of Contents

Part I: PLANNING PROCESS

Introduction

Q&A | ELEMENT A: PLANNING PROCESS | A1-b.

Q: Does the plan list the jurisdiction(s) participating in the plan that seek approval, and describe how they participated in the planning process? (Requirement 44 CFR § 201.6(c)(1))
A: See **Introduction** below.

Mitigation planning provides a framework local government can build on to lessen the impacts of natural disasters. By encouraging whole-community involvement, assessing risk and using a range of resources, local governments can reduce risk to people, economies and natural environments.

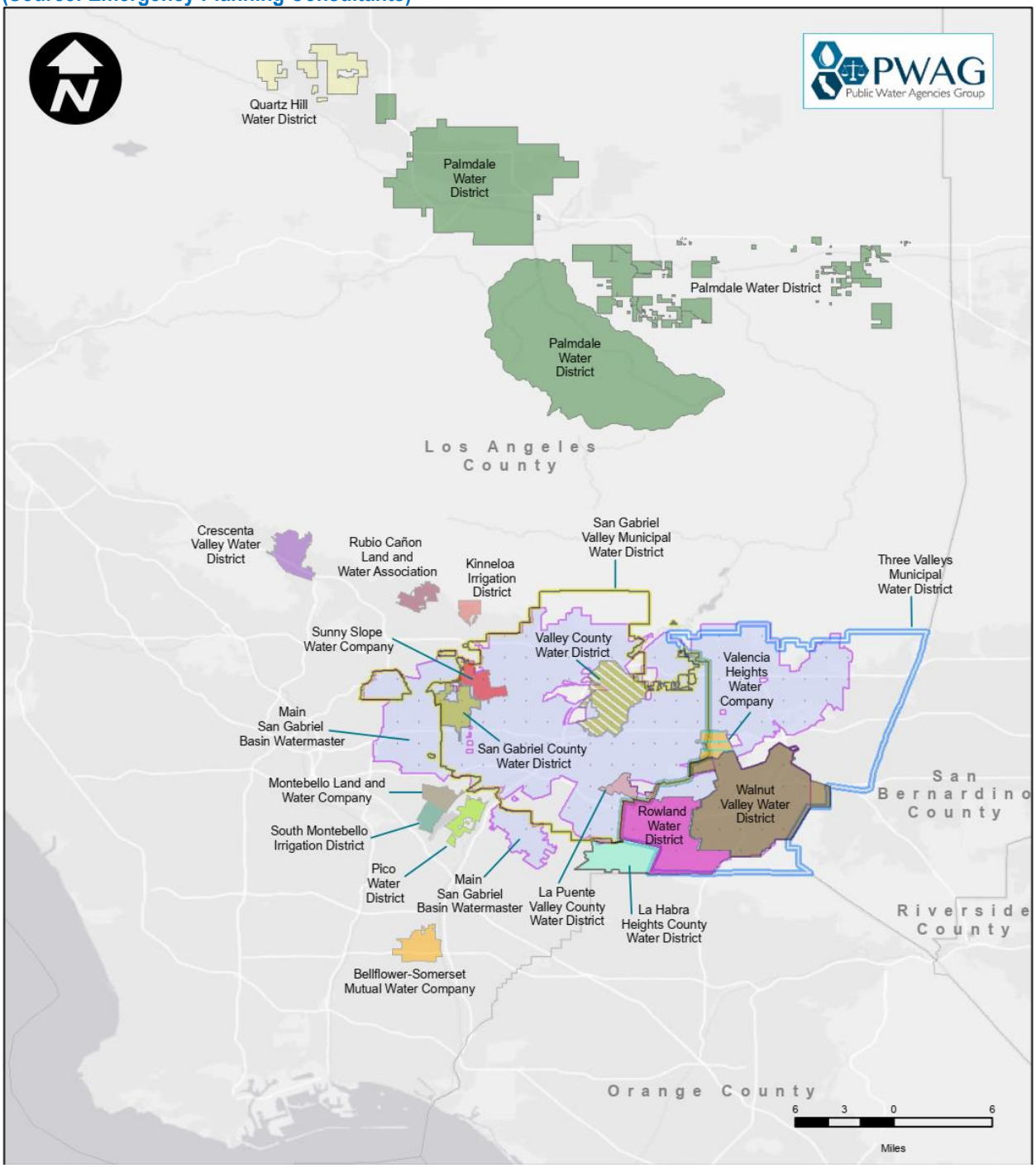
This Multi-Jurisdictional Hazard Mitigation Plan (MJHMP) was prepared in response to the Disaster Mitigation Act of 2000 (DMA 2000). DMA 2000 (also known as Public Law 106-390) since 2005 has required state and local governments (including special districts and joint powers authorities) to prepare mitigation plans to document their mitigation planning process, and identify hazards, potential losses, mitigation needs, goals, and strategies. This type of planning supplements the comprehensive land use planning and emergency management planning programs for the participating agencies. The agencies included in this MJHMP are:

- Bellflower-Somerset Mutual Water Company
- Kinneloa Irrigation District
- La Puente Valley County Water District
- Pico Water District
- Public Water Agencies Group
- Rowland Water District
- San Gabriel County Water District
- South Montebello Irrigation District
- Three Valleys Municipal Water District
- Valencia Heights Water Company
- Walnut Valley Water District

These agencies have come together from shared participation in the Public Water Agencies Group which includes a total of 20 water agencies. Of those, the 11 agencies named above sought to work together on a multi-jurisdictional hazard mitigation plan. This is the first such plan for the participating agencies. Once adopted by the agency decisions makers and approved by FEMA, the Plan will ensure eligibility for Hazard Mitigation Grant Program (HMGP) and other mitigation-related funding.

Following is a PWAG project area map showing not only the “footprint” for PWAG but also the location of all of its 20 water agencies:

Map: Public Water Agencies Group Footprint
(Source: Emergency Planning Consultants)



The MJHMP is organized into a Base Plan which includes information on the planning process, an overview of the planning process and risk/vulnerability assessment as well as information pertinent to the Rowland Water District including a district profile, capability assessment, asset vulnerability, and mitigation action measures. Ten Annexes are attached separately from the Base Plan for each of the other participating agencies. Each Annex contains information including an agency profile, capability assessment, asset vulnerability and mitigation measures for the other 10 agencies participating in the MJHMP.

DMA 2000 was designed to establish a national program for pre-disaster mitigation, streamline disaster relief at the federal and state levels, and control federal disaster assistance costs. Congress believed these requirements would produce the following benefits:

- ✓ Reduce loss of life and property, human suffering, economic disruption, and disaster costs.
- ✓ Prioritize hazard mitigation at the local level with increased emphasis on planning and public involvement, assessing risks, implementing loss reduction measures, and ensuring critical facilities/services survive a disaster.
- ✓ Promote education and economic incentives to form community-based partnerships and leverage non-federal resources to commit to and implement long-term hazard mitigation activities.

The following FEMA key terms are used throughout this plan (Source: FEMA, May 2023, *Local Mitigation Planning Handbook*):

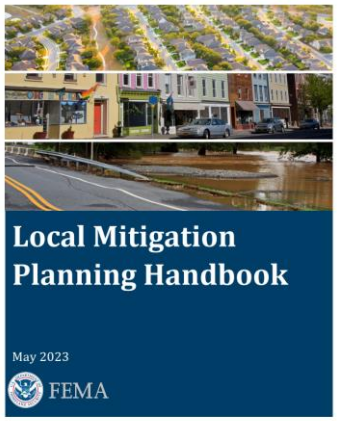
Hazard Mitigation is any sustained action taken to reduce or eliminate long-term risk to life and property from hazards.

Mitigation Planning is a community-driven process to help state, local, tribal and territorial governments plan for hazard risk. By planning for risk and setting a strategy for action, governments can reduce the negative impacts of future disasters.

Community Resilience is a community's ability to prepare for anticipated hazards, adapt to changing conditions, and withstand and recover rapidly from disruptions. Activities such as disaster preparedness (which includes prevention, protection, mitigation, response and recovery) and reducing community stressors (the underlying social, economic and environmental conditions that can weaken a community) are key steps to resilience.

Community Lifelines are the most fundamental services in the community that, when stabilized, enable all other aspects of society to function. The integrated network of assets, services and capabilities that make up community lifelines are used day to day to support recurring needs. Lifelines enable the continuous operation of critical government and business functions and are essential to human health and safety or economic security.

Planning Approach



An eight-step planning approach outlined in FEMA's May 2023 publication, *Local Mitigation Planning Handbook* was used to develop this plan:

- ✓ Task 1. Determine the Planning Area, Process and Resources
- ✓ Task 2. Build the Planning Team
- ✓ Task 3. Create an Outreach Strategy
- ✓ Task 4. Conduct a Risk Assessment
- ✓ Task 5. Review Community Capabilities
- ✓ Task 6. Develop a Mitigation Strategy
- ✓ Task 7. Keeping the Plan Current
- ✓ Task 8. Review and Adopt the Plan

Q&A | ELEMENT A: PLANNING PROCESS | A2-a.

Q: Does the plan identify all stakeholders involved or given an opportunity to be involved in the planning process, and how each stakeholder was presented with this opportunity? (Requirement 44 CFR § 201.6(b)(2))

A: See **Stakeholders** below.

Stakeholders

The Hazard Mitigation Planning Team (Planning Team) consisting of representatives from each of the participating agencies worked with Emergency Planning Consultants to create the updated Plan. The Planning Team served as the primary stakeholders throughout the planning process. The general public (customers) and external agencies (jurisdictions served, community lifelines, adjoining communities and districts, etc.) served as secondary stakeholders with an opportunity to contribute to the plan during the Plan Writing Phase of the planning process.

As required by DMA 2000, the Planning Team involved the general public and external agencies by making the Second Draft Plan available online during the plan writing phase. In addition,

_____

_____

The general public and external agencies served as secondary stakeholders with an opportunity to contribute to the plan during the Plan Writing Phase of the planning process.

Q&A | ELEMENT C: Mitigation Strategy | C2-a.

Q: Does the plan contain a narrative description or a table/list of their participation activities? (Requirement 44 CFR § 201.6(c)(3)(ii))

A: See **National Flood Insurance Program** below.

National Flood Insurance Program

Established 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.

NFIP Participation

The MJHMP participating agencies are exempt from implementing or purchasing flood insurance through NFIP.

Q&A | ELEMENT B: RISK ASSESSMENT | B2-c.
Q: Does the Plan address NFIP-insured structures within each jurisdiction that have been repetitively damaged by floods? (Requirement 44 CFR § 201.6(c)(2)(ii)) **A:** See **Repetitive Loss Properties** below.

Repetitive Loss Properties

Repetitive Loss Properties (RLPs) are most susceptible to flood damages; therefore, they have been the focus of flood hazard mitigation programs. Unlike a countywide program, a Floodplain Management Plan (FMP) for repetitive loss properties involves highly diversified property profiles, drainage issues, and property owner's interest. It also requires public involvement processes unique to each RLP area. The objective of an FMP is to provide specific potential mitigation measures and activities to best address the problems and needs of communities with repetitive loss properties. A repetitive loss property is one for which two or more claims of $1,000 or more have been paid by the National Flood Insurance Program (NFIP) within any given ten-year period. According to FEMA resources, none of the Repetitive Loss Properties are located in the MJHMP project area.

Planning Process

Throughout the project, the Planning Team served as the primary stakeholders while also making a concerted effort to gather input and ideas from the general public and external agencies who served as secondary stakeholders. The hazard mitigation strategies contained in this plan were developed through an extensive planning process involving the Rowland Water District and other participating agencies, general public, and external agencies.

It's important to note that particular attention was given to adding research on climate vulnerability while paying special attention to underserved communities and socially vulnerable populations.

Following review and input by the Planning Team to the First Draft Plan (Base Plan and Annexes), next (still during the Plan Writing Phase), the Second Draft Plan was shared with the general public and external agencies. Next, the comments gathered from the secondary stakeholders were incorporated into a Third Draft Plan which was submitted to Cal OES and FEMA along with a request for a determination of "approvable pending adoption".

Next, the Planning Team completed amendments to the Plan to reflect mandated input by Cal OES and FEMA. The Base Plan - Final Draft was then posted in advance of the Rowland Water District's Board of Directors public meeting. Following adoption by the Board, proof of adoption was forwarded to FEMA along with a request for a Letter of Approval. The FEMA Letter of Approval will be included in the Final Plan. Once the Base Plan received FEMA approval, the other participating agencies posted the Base Plan and their own Annex in advance of their Board of Directors. Following adoption by their Board, proof of adoption was forwarded to FEMA along with a request for a Letter of Approval.

The planning process described above is portrayed below in a progression:

Q&A | ELEMENT A: PLANNING PROCESS | A1-a.
Q: Does the plan document how the plan was prepared, including the schedule or time frame and activities that made up the plan's development, as well as who was involved? (Requirement 44 CFR § 201.6(c)(1)) **A:** See **Plan Methodology and Planning Phases Progression** below.
Q&A | ELEMENT A: PLANNING PROCESS | A2-a.
Q: Does the plan identify all stakeholders involved or given an opportunity to be involved in the planning process, and how each stakeholder was presented with this opportunity? (Requirement 44 CFR § 201.6(b)(2)) **A:** See **Planning Phases Progression** below.

Figure: Planning Phases Progression

PLANNING PHASES PROGRESSION				
Plan Writing Phase (First & Second Draft Plan)	**Plan Review Phase (Third Draft Plan)**	**Plan Adoption Phase (Final Draft Plan)**	**Plan Approval Phase (Final Plan)**	**Plan Implementation Phase**
• Planning Team input – research, meetings, writing, review of First Draft Plan • Incorporate input from the Planning Team into Second Draft Plan • Invite general public and external agencies via email, web posting, and social media to review, comment, and contribute to the Second Draft Plan • Incorporate input into the Third Draft Plan	• Third Draft Plan sent to Cal OES and FEMA for approvable pending adoption • Address any mandated revisions identified by Cal OES and FEMA into Final Draft Plan • Receive FEMA Approvable Pending Adoption	• Post public notice of Board meetings along with the Final Draft Plan • Final Draft Plan distributed to Board in advance of meeting • Present Base Plan - Final Draft to Rowland Board of Directors for adoption • Board adopts Base Plan - Final Draft • Proof of adoption sent to FEMA • FEMA issues Letter of Adoption • Other participating agencies present Annex to Board of Directors. • Proof of adoption sent to FEMA • FEMA issues Letter of Approval	• Submit Proof of Adoption to FEMA with request for final approval • Receive FEMA Letter of Approval • Incorporate FEMA approval and City Council resolution into the Final Plan	• Conduct bi-annual MJHMP Planning Team meetings • Conduct quarterly RWD Planning Team meetings • Integrate mitigation action items into budget and other funding and strategic documents

Plan Methodology

The Planning Team discussed knowledge of hazards and past historical events, as well as building codes and facilities maintenance plans.

The rest of this section describes the mitigation planning process including 1) Planning Team involvement, 2) general public, underserved communities, socially vulnerable populations, and external agency involvement; and 3) integration of existing data and plans.

Q&A | ELEMENT A: PLANNING PROCESS | A1-a.

Q: Does the plan document how the plan was prepared, including the schedule or time frame and activities that made up the plan's development, as well as who was involved? (Requirement 44 CFR § 201.6(c)(1))

A: See **Planning Team Involvement** below.

Planning Team Involvement

The Planning Team consisted of representatives from each of the participating agencies. The Planning Team served as the primary stakeholders throughout the planning process. The Planning Team was responsible for the following tasks:

- ✓ Develop planning goals,
- ✓ Prepare timeline,
- ✓ Ensure plan meets DMA 2000 requirements,
- ✓ Organize and solicit involvement of public and external agencies,
- ✓ Analyze existing resources including data, maps, and reports,
- ✓ Research hazard information,
- ✓ Review HAZUS loss projection estimates,
- ✓ Develop mitigation action items, and
- ✓ Participate in meetings of the Planning Team and Board of Directors.

The Planning Team, with assistance from Emergency Planning Consultants, identified and profiled hazards; determined hazard rankings; conducted capability assessment, estimated potential exposure or losses; evaluated development trends and specific risks; researched climate vulnerability; identified location of underserved communities and socially vulnerable populations; and developed mitigation goals and action items.

Table: Planning Team Level of Participation

Name	Research and Writing of Plan	Planning Team Meeting 1: 9/14/2022	Planning Team Meeting 2: 9/28/2022	One-on-One Mentoring Session: 11/2-12/2022	Collaborative Meeting: 12/6/2023	Planning Team Meeting 3: 1/19/2023	One-on-One Mentoring Session: 2-5/2023	Planning Team Meeting 4: June 28, 2023	Planning Team Comment on First Draft Plan	Distribute Second Draft Plan to General Public and External Agencies	Submit Third Draft Plan to Cal OES/FEMA for Approvable Pending Adoption	Post Final Draft Plan in Advance of RWD Board of Directors Meeting	Present Final Draft Base Plan to RWD Board of Directors for Adoption	Submit Proof of Adoption to FEMA for Final Approval	Incorporate FEMA Approval into Final Plan	Present Annexes to Boards of Directors for Adoption
Bellflower-Somerset Mutual Water Company																
Steve Lenton	X	X	X	X	X		X	X								
John Poehler	X			X		X	X	X								
Mike Vasquez								X								
Kinneloa Irrigation District																
Tom Majich	X						X	X								
Martin Aragon	X	X	X	X	X	X										
Chris Burt	X	X		X												
Michele Ferrell	X			X	X											
La Puente Valley County Water District																
Paul Zampiello	X	X	X	X	X	X	X	X								
Pico Water District																
Joe Basulto	X	X	X	X	X	X	X	X								
Matt Tryon	X				X	X		X								

Name	Research and Writing of Plan	Planning Team Meeting 1: 9/14/2022	Planning Team Meeting 2: 9/28/2022	One-on-One Mentoring Session: 11/2-12/2022	Collaborative Meeting: 12/6/2023	Planning Team Meeting 3: 1/19/2023	One-on-One Mentoring Session: 2-5/2023	Planning Team Meeting 4: June 28, 2023	Planning Team Comment on First Draft Plan	Distribute Second Draft Plan to General Public and External Agencies	Submit Third Draft Plan to Cal OES/FEMA for Approvable Pending Adoption	Post Final Draft Plan in Advance of RWD Board of Directors Meeting	Present Final Draft Base Plan to RWD Board of Directors for Adoption	Submit Proof of Adoption to FEMA for Final Approval	Incorporate FEMA Approval into Final Plan	Present Annexes to Boards of Directors for Adoption
Public Water Agencies Group																
Alix Stayton	X	X	X	X	X	X	X	X								
Rowland Water District																
Tom Coleman	X	X	X		X	X	X	X								
Elisabeth Mendez	X	X	X	X	X	X	X									
Dusty Moisio	X			X	X	X	X									
Myra Malner	X	X														
San Gabriel County Water District																
Jim Prior	X	X	X	X			X									
Casey Feilen	X	X	X	X	X		X	X								
South Montebello Irrigation District																
Alberto Corrales	X	X			X		X									
Jordan Betancourt	X	X	X	X	X	X	X	X								
Three Valleys Municipal Water District																
Kirk Howie	X	X	X	X	X	X	X									

Name	Research and Writing of Plan	Planning Team Meeting 1: 9/14/2022	Planning Team Meeting 2: 9/28/2022	One-on-One Mentoring Session: 11/2-12/2022	Collaborative Meeting: 12/6/2023	Planning Team Meeting 3: 1/19/2023	One-on-One Mentoring Session: 2-5/2023	Planning Team Meeting 4: June 28, 2023	Planning Team Comment on First Draft Plan	Distribute Second Draft Plan to General Public and External Agencies	Submit Third Draft Plan to Cal OES/FEMA for Approvable Pending Adoption	Post Final Draft Plan in Advance of RWD Board of Directors Meeting	Present Final Draft Base Plan to RWD Board of Directors for Adoption	Submit Proof of Adoption to FEMA for Final Approval	Incorporate FEMA Approval into Final Plan	Present Annexes to Boards of Directors for Adoption
Robert Peng	X			X		X	X	X								
Valencia Heights Water Company																
Dave Michalko	X	X		X	X	X	X	X								
Gloria Galindo	X			X			X	X								
Walnut Valley Water District																
Jared Macias	X	X	X	X	X	X	X	X								
Erik Hitchman	X				X											
Emergency Planning Consultants																
Carolyn Harshman	X	X	X			X	X	X								
Jill Caputi	X															

Tasks	August 2022	September	October	November	December	January 2023	February	March	April	May	June	July	August	September	October	November	December	January 2024	February	March	April	May	June
Task I: Shareholder Involvement																							
Planning Team Meeting #1 MJHMP Overview and Initial Hazard Briefing		X																					
Planning Team Meeting #2 HAZUS and Developing Mitigation Strategy		X																					
1:1 Meetings with Participating Agencies on Mitigation Strategy				X																			
Collaborative Meeting					X																		
Planning Team Meeting #3 Developing Mitigation Strategy						X																	
1:1 Meeting with Participating Agencies on Mitigation Strategy							X	X	X	X													
Planning Team Meeting #4 Review First Draft Plan											X												
Encourage Customer Participation in Household and Business Mitigation Activities (Website, Social Media)																		X					
Inform Customers and External Agencies of Availability of Second Draft Plan																		X					
Task II: Planning																							
Conduct Risk Assessment	X	X	X	X																			
Prepare HAZUS maps and reports				X	X																		
Prepare Agency Hazard-Specific Maps with Critical Facilities					X																		
Prepare Capability Assessment							X	X	X	X													
Task III: Goals, Objectives, and Mitigation Measures																							
Prepare Mitigation Actions		X		X			X	X	X	X													
Hazard Mitigation Plan Maintenance Process		X																					
Task IV: Draft Plans and Final Plan																							
Prepare First Draft Plan	X	X	X	X	X	X	X	X	X	X	X	X											
Prepare Second Draft Plan													X	X	X	X	X	X					

Prepare Third Draft Plan																							
Submit Third Draft Plan to Cal OES/FEMA. Complete Mandated Revisions.																			X	X	X	X	
Receive FEMA's Approvable Pending Adoption																						X	
Post and Conduct RWD Board of Directors Meeting for Adoption of Base Plan																						X	
Post and Conduct Board of Directors Meetings for Annex Adoptions																						X	
Submit Proof of Adoptions to FEMA																						X	
Receive FEMA Final Approval																							X
Incorporate FEMA Approval into Base Plan and Annexes																							X

Q&A | ELEMENT A: PLANNING PROCESS | A2-a.
Q: Does the plan document identify all stakeholders involved or given an opportunity to be involved in the planning process, and how each stakeholder was presented with this opportunity? (Requirement 44 CFR § 201.6(b)(2)) **A:** See **Stakeholders** below.
Q&A | ELEMENT A: PLANNING PROCESS | A3-a.
Q: Does the plan document how the public was given the opportunity to be involved in the planning process and how their feedback was included in the plan? (Requirement 44 CFR § 201.6(b)(1)) **A:** See **Stakeholders** below.

Stakeholders

The Hazard Mitigation Planning Team (Planning Team) consisting of representatives from each of the participating agencies worked with Emergency Planning Consultants to create the updated Plan. The Planning Team served as the primary stakeholders throughout the planning process. The agency customers and external agencies (e.g., jurisdictions served, community lifelines, adjoining communities and districts, etc.) served as secondary stakeholders with an opportunity to contribute to the plan during the Plan Writing Phase of the planning process.

The secondary stakeholders were provided the opportunity to provide input to the Second Draft Plan through public announcements at Board of Directors meetings, via social media, email invitations to the external agencies (see **Attachments**) and notifications sent directly to customers. The gathered input was incorporated into the Third Draft Plan prior to distribution to Cal OES and FEMA. For a specific accounting of the date, source, information gathered, and use of information during the Plan Writing Phase, please see **Attachments**.

Also, once FEMA has issued an Approvable Pending Adoption, a public meeting will be scheduled with the RWD Board of Directors for consideration and adoption of the MJHMP Base Plan. Prior to that meeting, the RWD staff will post the Base Plan and each of the Annexes on the RWD website. The same process will be followed by each of the Annex holders.

As available to the individual agencies, the customers will be informed via a range of public noticing venues (e.g., websites, monthly billing notifications) as well as social media including Facebook, Twitter, and Instagram.

External agencies will be informed via email of the Base Plan and Annex Final Draft Plans and encouraged to participate in the decision maker public meeting. Any comments gathered will be noted in the staff report by the participating agency and added to the Final Plan. See **Attachments** for details.

Q&A | ELEMENT C. MITIGATION STRATEGY | C1-a.
Q: Does the plan describe how the existing capabilities of each participant are available to support the mitigation strategy? Does this include a discussion of the existing building codes and land use and development ordinances or regulations? (Requirement 44 CFR § 201.6(c)(3)) **A:** See **Capability Assessment – Existing Processes and Programs** below.

Capability Assessment – Existing Processes and Programs

The participating agencies will incorporate mitigation planning as an integral component of daily operations. This will be accomplished by the Planning Team working with their respective departments to integrate mitigation strategies into the planning documents and the agency operational guidelines. In addition to the Capability Assessment below for the Rowland Water District, the Assessments for the other participating agencies are located in the Annexes. The Planning Team will strive to identify additional policies, programs, practices, and procedures that could be created or modified to address mitigation activities.

The individual agencies will incorporate mitigation planning as an integral component of daily operations. This will be accomplished by the Planning Team members with their respective departments to integrate mitigation strategies into their planning documents and operational guidelines. FEMA identifies four types of capabilities: Planning and Regulatory, Administrative and Technical, Financial, and Education and Outreach. Following are explanations drawn from "Beyond The Basics" a website developed as part of a multi-year research study funded by the U.S. Department of Homeland Security, Coastal Resilience Center and led by the Center for Sustainable Community Design within the Institute for the Environment at the University of North Carolina at Chapel Hill and the Institute for Sustainable Coastal Communities at Texas A&M University. This excellent resource ties FEMA regulations together with best practices in hazard mitigation.

Planning and Regulatory

Planning and regulatory capabilities are based on the implementation of ordinances, policies, local laws and State statutes, and plans and programs that relate to guiding and managing growth and development. Examples of planning capabilities that can either enable or inhibit mitigation include comprehensive land use plans, capital improvements programs, transportation plans, small area development plans, disaster recovery and reconstruction plans, and emergency preparedness and response plans. Plans describe specific actions or policies that support community goals and drive decisions. Likewise, examples of regulatory capabilities include the enforcement of zoning ordinances, subdivision regulations, and building codes that regulate how and where land is developed and structures are built. Planning and regulatory capabilities refer not only to the current plans and regulations, but also to the community's ability to change and improve those plans and regulations as needed.

Administrative and Technical

Administrative and technical capability refers to the community's staff and their skills and tools that can be used for mitigation planning and to implement specific mitigation actions. It also refers to the ability to access and coordinate these resources effectively. Think about the types of personnel employed by each agency, the public and private sector resources that may be accessed to implement mitigation activities in the service area, and the level of knowledge and technical expertise from all of these sources. These include engineers, planners, emergency managers, GIS analysts, building inspectors, grant writers, floodplain managers, and more. For agencies with limited staff resources, capacity should also be considered; while staff members may have specific skills, they may not have the time to devote to additional work tasks.

The Agency Planning Team can identify resources available through other government entities, such as cities, counties or special districts, which may be able to provide technical assistance to communities with limited resources. For example, a small town may turn to county planners, engineers, or a regional planning agency to support its mitigation planning efforts and provide

assistance. For large jurisdictions, reviewing administrative and technical capabilities may involve targeting specific staff in various departments that have the expertise and are available to support hazard mitigation initiatives. The degree of intergovernmental coordination among departments also affects administrative capability.

Financial

Financial capabilities are the resources that a jurisdiction has access to or is eligible to use to fund mitigation actions. The costs associated with implementing mitigation activities vary. Some mitigation actions, such as building assessment or outreach efforts, require little to no costs other than staff time and existing operating budgets. Other actions, such as the acquisition of flood-prone properties, could require a substantial monetary commitment from local, state, and federal funding sources. Some local governments (including special districts) may have access to a recurring source of revenue beyond property, sales, and income taxes, such as stormwater utility or development impact fees. These communities may be able to use the funds to support local mitigation efforts independently or as the local match or cost-share often required for grant funding.

Education and Outreach

This type of capability refers to education and outreach programs and methods already in place that could be used to implement mitigation activities and communicate hazard-related information.

The table below includes a broad range of capabilities within the Rowland Water District to successfully accomplish mitigation.

Table: Capability Assessment - Existing Processes and Programs
(Source: Rowland Water District Planning Team, 2023)

Type of Capability				Name of Capability	Capability Description and Ability to Support Mitigation
Planning and Regulatory	Administrative and Technical	Financial	Education and Outreach		
	X	X	X	General Manager	The General Manager is the liaison to the Board of Directors and oversees the day to day operations of the District. The General Manager provides leadership and initiates strategic planning to implement the goals and the vision of the Board of Directors. The Foundational Principles provide guidance in establishing long-term organizational goals, and the General Manager utilizes the talent and skills of the entire staff to fulfill the organizational objectives. The General Manager is appointed by the Board to oversee the daily operations of the District. The General Manager will be instrumental in supporting the development, maintenance, and implementation of the Hazard Mitigation Plan, including the mitigation actions. Support will include providing funding and staff.
	X			Human Resources -	Human Resources (HR) is responsible for ensuring that the District

Type of Capability				Name of Capability	Capability Description and Ability to Support Mitigation
Planning and Regulatory	Administrative and Technical	Financial	Education and Outreach		
				Human Resources Manager	initiates and facilitates strategies for building a workforce which supports and enhances the organizational objectives and values. In addition to workforce development, the division is responsible for overseeing employee benefits, classification and compensation, workers compensation, general auto and property liability insurance, policies and procedures, employee relations, administrative support, and employee development.
			X	Education & Community Outreach - Education & Community Outreach Coordinator	Education & Community Outreach oversees strategic communications, community outreach, water conservation outreach, special events, school education programs, and media relations for the District. Several communication methods are used to disseminate information to internal and external customers and strengthen the District's brand within the community and throughout the water industry. These include website management, social media outreach, community workshops and tours, community marketing, videos and commercials, and signage on vehicles and billboards. Each of these elements plays a critical role in promoting the District's strategic vision, mission, and values. Mitigation actions related to the private construction of new structures or retrofits or improvements to existing structures may be supported with public education and other efforts of the Communications & Outreach Division. Identified as coordinating agency for several mitigation action items.
	X	X		Information Technology (Contracted)	Information Technology (IT) provides comprehensive technology planning, development, integration, operation, maintenance, and support to all areas of the District to maximize efficiency. The primary responsibilities include day-to-day network center operation and the provision of a safe and secure network environment for centralized data libraries and equipment. Extended responsibilities include access control systems, audiovisual systems, data storage, database systems, disaster recovery, mobile devices, network intrusion prevention, printers, scanners, multifunction copiers, servers, workstations, software development, software implementation, telecommunications, telephone system, WI-FI, and Internet. Identified as coordinating agency for several mitigation action items.
X	X	X	X	Director of Operations, Project Manager; Contracted	With the support of the Director of Operations the Project Manager oversees the management of capital improvement projects, water resource management, the District's Master Plans for water, recycled water, water supplies, and all engineering and planning work. The AGM and Director actively participate in regional water and wastewater planning committees. The Director of Operations also oversees Operations and Maintenance Departments and therefore allocates efforts evenly between the Departments, respectively.

Type of Capability				Name of Capability	Capability Description and Ability to Support Mitigation
Planning and Regulatory	Administrative and Technical	Financial	Education and Outreach		
	X		X	Water Resource – General Manager; Assistant General Manager	This division falls primarily under the purview of the General Manager and the Assistant General Manager with the general support of department staff. They conduct water supply analysis and make projections of future water supply needs based on estimates of development activities and other factors; develop and recommend short- and long-term plans and strategies for meeting expected demand. This division helps develop and coordinate a variety of water conservation programs and activities, including but not limited to, use of recycled water, groundwater basin management, maximizing the efficiency of groundwater recharge facilities and similar efforts, and planning and conducting research projects associated with water resources and water conservation. Maintains and runs the District's water hydraulic models for the purpose of planning and design. This Division is identified as the coordinating agency for several mitigation action items.
	X			Design & Construction Division - Director of Operations; Project Manager; Contracted	This Director of Operations and Project Manager prioritize and establish schedules and methods for the design and construction of District capital improvement projects. They monitor and oversee engineering design activities, including those prepared by consultants; prepare or review engineering plans, cost estimates, labor proposals, agreements, public works contracts, and project specifications. The Project Manager conducts construction inspections of water and recycled water systems for a variety of District or developer-built projects. This division implements construction management methods to manage contractors that are building the District's capital improvements projects in the field.
	X		X	Geographic Information Systems Division – Assistant General Manager; Director of Operations; Contracted	This division is responsible for coordination and participation in database management for both the Geographic Information System (GIS). This division updates and maintains GIS databases for water, recycled water, and wastewater facilities from construction drawings to as-built information; performs data capturing and conversion, data entry, and graphic editing activities; develops user friendly file management systems and completes geographic data analyses. This division utilizes professional Global Positioning System (GPS) equipment to collect geographical information in the field; locates District assets, resolves accuracy issues using GPS and integrates GPS data into GIS database. GIS viewing application provides accurate, accessible, and functional data to both the desktop and mobile devices within the District. GIS also functions as a helpful reporting tool and has asset management capabilities. Although the division is not specifically identified in the mitigation actions, the staff will be involved in implementing many of the mitigation action items.

Type of Capability				Name of Capability	Capability Description and Ability to Support Mitigation
Planning and Regulatory	Administrative and Technical	Financial	Education and Outreach		
	X		X	Development Division – General Manager; Assistant General Manager; Project Manager	This division enforces and gains compliance of applicable District, local, regional, state and federal rules and best practices related to water and recycled water from residential, commercial and industrial developers. This is done by an application and plan check process for all new development projects and tenant improvements of existing developments. The Development Division is identified as the coordinating agency for several mitigation action items.
	X		X	Operations - Water Treatment Division – Operations Supervisor' Compliance & Safety Manager	Water Treatment responsibilities include District-wide water quality monitoring, state and federal drinking water regulatory compliance, and the operation and maintenance of water treatment. Water sources include local ground water, local surface water, and imported surface water. The Operations – Water Treatment Division is identified as the coordinating agency for several mitigation action items.
		X		Operations - Production Division – Director of Operations; Water Systems Supervisor	Production's responsibilities include water supply and operations. In addition, the division is responsible for daily monitoring, maintenance, and repair of the District's groundwater wells, boosters, reservoirs, chlorination stations, and control valves, including communications and controls for the District's Water Treatment, Water Production. Communications include Ethernet and serial networks utilizing wire, fiber optics, and wireless media. Controls focuses on the design, integration, development, and implementation of controls systems which leverage technology to facilitate more effective and efficient operational strategies. The Operations – Production Division is identified as the coordinating agency for several mitigation action items.
	X			Operations – Maintenance: Facilities Division Facilities Maintenance; Education & Community Outreach Coordinator; Executive Services Manager	Facilities' responsibilities include the maintenance, repair, and general upkeep of the District's buildings and building equipment. The Facilities Division is also responsible for logistical set-up for all District events, including the District's monthly Board of Director's Meetings. The Operations – Maintenance: Facilities Division is identified as the coordinating agency for several mitigation action items.
	X	X	X	Operations - Fleet Maintenance Division Facilities Maintenance; Contracted	Fleet Maintenance's responsibilities include the maintenance and repair of the District's vehicles and heavy equipment. The Operations – Fleet Maintenance Division is identified as the coordinating agency for several mitigation action items.
X				Operations - Water Maintenance Division – Director of Operations; Field Operations	Water Maintenance's responsibilities include the maintenance and repair of the District's water system infrastructure which includes mains, hydrants, valves, services, and implementation of preventative maintenance programs. The division strives to provide prompt

Type of Capability				Name of Capability	Capability Description and Ability to Support Mitigation
Planning and Regulatory	Administrative and Technical	Financial	Education and Outreach		
				Supervisor	turnaround times on all customer requests, exceptional customer service and responds 24 hours a day, 365 days a year to all water emergencies. The Operations – Water Maintenance Division is identified as the coordinating agency for several mitigation action items.
X	X	X	X	Hazard Mitigation Planning Team – General Manager; Assistant General Manager; Director of Finance; Compliance & Safety Manager	The Hazard Mitigation Planning Team is made up of representatives from various departments and divisions that are assigned mitigation action items in the Hazard Mitigation Plan. In addition to responsibility to prepare each of the 5-year plan updates as required by FEMA, the Planning Team is responsible for implementing, monitoring, and evaluating the plan during its quarterly meetings. The Planning Team is assigned several mitigation action items and plays a pivotal role in implementing and funding the overall Hazard Mitigation Plan.
X	X	X	X	Emergency Response Plan – Contracted	Emergency Response Plan is a reference and guidebook to operations during a major emergency impacting the District. The Plan includes a discussion on a wide range of hazards, organization and staffing of the Emergency Operations Center, and connectivity with field responders and external agencies. Last Revised: August 2021
X	X	X	X	Urban Water Management Plan – Contracted	The Urban Water Management Plan was last updated in 2020. This plan outlines the water infrastructure needs until the District reaches build-out.

Q&A | ELEMENT C: MITIGATION STRATEGY | C1-b.

Q: Does the plan describe each participant's ability to expand and improve the identified capabilities to achieve mitigation? (Requirement 44 CFR § 201.6(c)(3))

A: See **Expanding and Improving on Capabilities** below.

Expanding and Improving on Capabilities

Planning and Regulatory Capabilities – The district builds and maintains its own buildings and infrastructure and regulates all construction within the community as per the International Building Code. Future plans are laid out in the Urban Water Management Plan and Capital Improvement Program. Some of the funding of future construction relies on successful bond measures where plans and justifications are shared with the public. Although the hazard mitigation plan is new, the District is very experienced in adhering to federal and state mandates.

Administrative and Technical –

Existing capabilities are typical for a special district. The District already has grant writing and GIS capabilities along with mutual aid agreements, and a warning/notification system. Grant

writing capabilities will continue to be especially important once the mitigation plan is approved by FEMA. That approval will trigger eligibility for a range of federal and state grants. Also, the Board of Directors could form a sub-committee dedicated to land use matters and mitigation plan implementation. The Plan's opportunities for success will be increased by the Board's involvement.

Finance -
All local governments have a broad range of funding sources. Taxation, impact fees, bonds, grants, and in-kind donations are included in the spectrum. As such, the District needs to keep these resources in mind for future mitigation activities.

Education and Outreach –
Utilize existing community groups, local citizen groups, and non-profit organizations to support and encourage mitigation as well as home and business mitigation. Involve the General Manager and Education & Community Outreach Coordinator in learning and talking about the Hazard Mitigation Plan.

Q&A | ELEMENT A: PLANNING PROCESS | A4-a.

Q: Does the plan document what existing plans, studies, reports, and technical information were reviewed for the development of the plan, as well as how they were incorporated into the document? (Requirement 44 CFR § 201.6(b)(3))

A: See **Use of Existing Data** below.

Use of Existing Data

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

Rowland Water District Website
https://www.rwd.org
Applicable Incorporation: Department Information for Capability Assessment.

Rowland Water District Urban Water Management Plan (2020)
https://www.rwd.org/urban-water-management-plan/
Applicable Incorporation: Information about hazards contributed to the hazard-specific sections. Also contains environmental justice content used in the District Profile.

Rowland Water District Strategic Plan (2022)
https://www.rwd.org/wp-content/uploads/2022/03/2022-Strategic-Plan.pdf
Applicable Incorporation: Information about hazards contributed to the hazard-specific sections. Also contains environmental justice content used in the District Profile.

County of Los Angeles General Plan (2015)
https://planning.lacounty.gov/assets/upl/project/gp_final-general-plan.pdf
Applicable Incorporation: Information about the planning area and geography.

County of Los Angeles All-Hazards Mitigation Plan (2020)
https://ceo.lacounty.gov/wp-content/uploads/2022/04/County-of-Los-Angeles-All-Hazards-Mitigation-Plan-APPROVED-05-2020.pdf
Applicable Incorporation: Information about hazards in the County contributed to the hazard-specific sections.

State of California Hazard Mitigation Plan (2018)
https://www.caloes.ca.gov/wp-content/uploads/002-2018-SHMP_FINAL_ENTIRE-PLAN.pdf
Applicable Incorporation: Risk Assessment – Hazard Identification.

HAZUS Maps and Reports
Created by Emergency Planning Consultants
Applicable Incorporation: Numerous HAZUS maps and reports have been included in the hazard-specific sections.

National Flood Insurance Program
https://www.fema.gov/national-flood-insurance-program
Applicable Incorporation: Community status used in the flood section.

Local Flood Insurance Rate Maps
https://msc.fema.gov/portal/home
Applicable Incorporation: Used in the Flood hazard section.

California Department of Forestry and Fire Protection (CAL FIRE)
https://www.fire.ca.gov/
Applicable Incorporation: Wildland fire hazard map in the Wildfire hazard section.

California Department of Conservation
www.conservation.ca.gov/cgs
Applicable Incorporation: Seismic hazards mapping used in earthquake hazard section.

U.S. Geological Survey (USGS)
www.usgs.gov
Applicable Incorporation: Earthquake records and statistics used in earthquake hazard section.

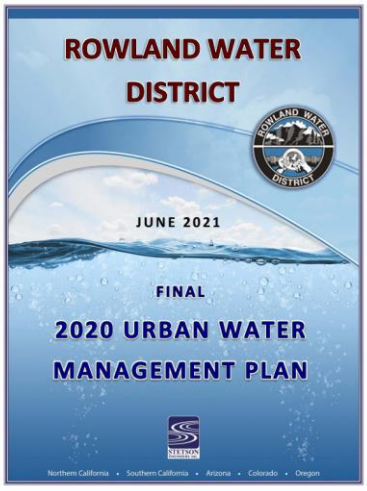
Using HAZUS for Mitigation Planning (2018)
https://www.fema.gov/sites/default/files/documents/fema_using-hazus-mitigation-planning.pdf
Applicable Incorporation: Used in Risk Assessment in HAZUS Information.

California's Fourth Climate Change Assessment: Los Angeles Region Report (2019)
https://www.ioes.ucla.edu/project/los-angeles-regional-climate-assessment/
Applicable Incorporation: Used in District Profile - Climate Information.

Part II: RISK ASSESSMENT

District Profile

Geography and the Environment

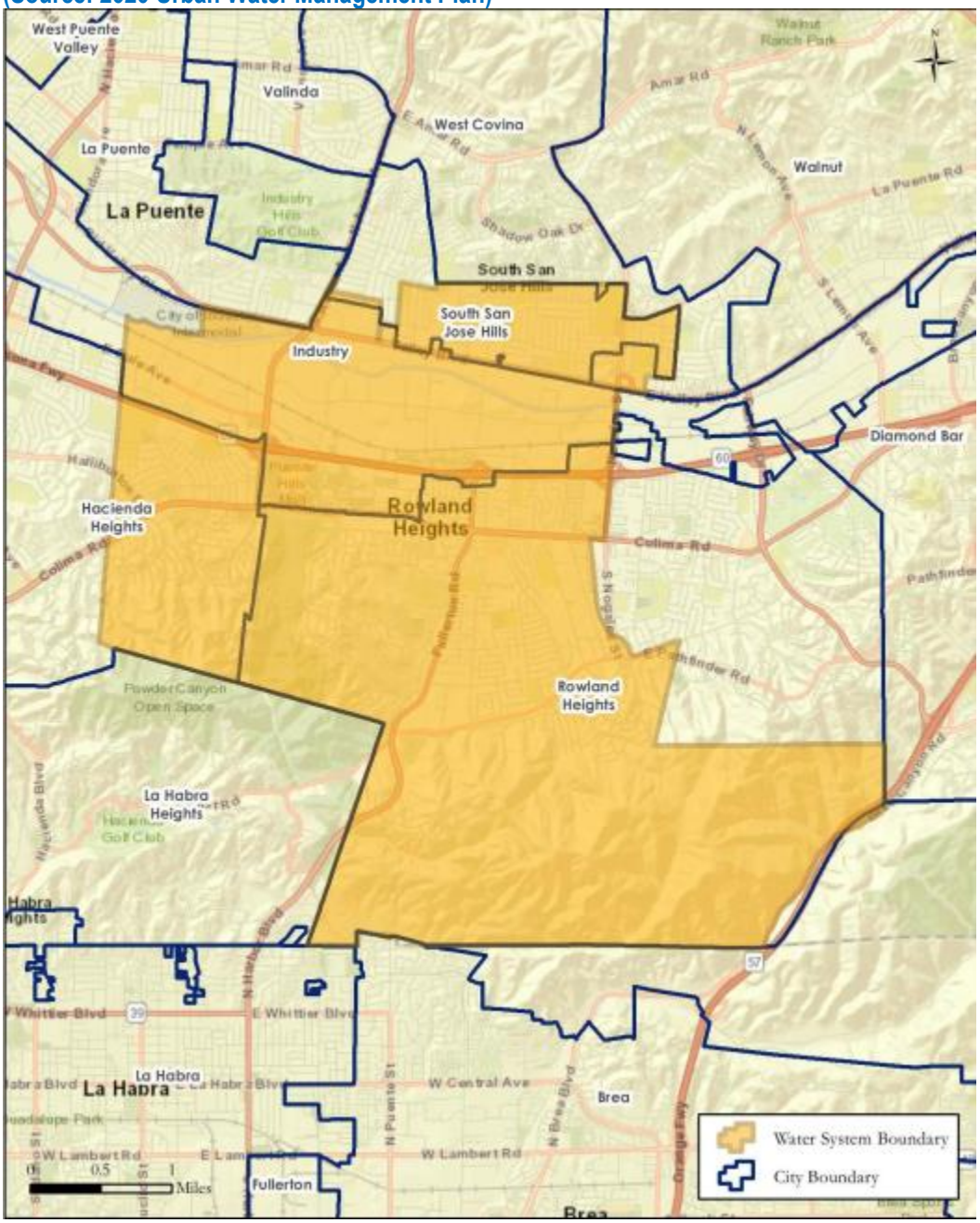


According to the 2020 Rowland Water District Urban Water Management Plan, the District was formed in 1953 and is approximately 17.2 square miles in size, located in southeastern Los Angeles County.

An urban water supplier is defined (pursuant to Section 10617 of the California Water Code or CWC1) as "a supplier, either publicly or privately owned, providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually. An urban water supplier includes a supplier or contractor for water, regardless of the basis of right, which distributes or sells for ultimate resale to customers." As such, the Rowland Water District is classified as an urban water supplier and is therefore required by the "Urban Water Management Planning Act" (1983) to prepare and adopt an Urban Water Management Plan, periodically, review its UWMP, and incorporate updated and new information into an updated UWMP at least once every five years.

The District's 2020 UWMP consists of the following chapters:
Chapter 1 Urban Water Management Plan Introduction and Overview
Chapter 2 Plan Preparation
Chapter 3 System Description
Chapter 4 Water Use Characterization
Chapter 5 SB X7-7 Baseline, Targets, and Compliance
Chapter 6 Water Supply Characterization
Chapter 7 Water Service Reliability and Drought Risk Assessment
Chapter 8 Water Shortage Contingency Plan
Chapter 9 Demand Management Measures
Chapter 10 Plan Adoption, Submittal, and Implementation

Map: Rowland Water District Service Area with City Boundaries
(Source: 2020 Urban Water Management Plan)



Services

Graphic: Rowland Water District Strategic Plan – About the District
(Source: Rowland Water District Strategic Plan, 2022)

According to the Rowland Water District Strategic Plan (2022), the District manages 13,800 customer service connections, services 1,650 fire hydrants, maintains more than 200 miles of potable water mains, and 18 miles of recycled water mains.

According to the RWD Urban Water Management Plan, the District transports, maintains, and delivers potable and recycled water to close to 60,000 people in portions of the cities of Industry, La Puente, and West Covina, as well as in the County's unincorporated areas of Hacienda Heights and Rowland Heights. The District relies mostly on imported drinking water supplies and also receives local groundwater from the Main San Gabriel Groundwater Basin. In addition, there are eight booster pump stations, consisting of 22 booster pumps pumping water to various elevations throughout our service area. The District primarily obtains its water supply by purchasing treated imported water supplies from the Metropolitan Water District of Southern California (MWD) through Three Valleys. The imported potable water is treated either at MWD's Weymouth Treatment Plant or at Three Valleys' Miramar Water Treatment Plant. The potable water supplies are delivered to the District through three imported water connections.

The District's total water demands (including potable and recycled water) over the past 10 years have ranged from 10,366 AFY to 12,490 AFY, with an average of 11,271 AFY. The District currently measures its water use through meter data and billing records.

Climate

According to the RWD 2020 Urban Water Management Plan, the historical average rainfall in the vicinity of the District's service area is 17.2 inches. The District's service area has a Mediterranean climate and summers can reach average maximum daily temperatures in the high 80s to low 90s. The District's water supplies and demands are projected during an average year, a single dry year and a five consecutive year drought and are based on historical data and projected demands. Nonetheless, it is recognized that changes in climate conditions may have an impact on water supplies.

Table: Service Area Climate Information
(Source: RWD 2020 Urban Water Management Plan)

Service Area Climate Information

Service Area Climate Information

Month	Average Temperature (F)	Average Min. Temperature (F)	Average Max. Temperature (F)	Average Total Precipitation (Inches)	ETo (Inches)
January	51.9	38.5	65.6	3.4	1.95
February	54.2	40.8	67.7	3.5	2.41
March	56.4	42.6	70.3	2.7	3.75
April	59.9	45.9	74.1	1.2	4.55
May	64.0	50.2	77.9	0.4	5.19
June	69.1	53.9	84.3	0.1	5.97
July	74.4	58.0	91.0	0.0	6.60
August	74.7	58.3	91.2	0.1	6.41
September	72.0	55.6	88.6	0.3	4.88
October	65.3	50.2	80.6	0.8	3.46
November	58.1	42.9	73.2	1.5	2.31
December	52.7	38.7	66.5	2.7	1.72
Annual	62.2	47.6	77.4	17.2	49.20

Climate Vulnerability Assessment

According to "California's Fourth Climate Change Assessment" developed by the State of California, continued climate change will have a severe impact on California. Increased temperatures, drought, wildfires, and sea level rise are several of the main concerns related to climate change in the Southwest. Other impacts anticipated from climate change include food insecurity, increases in vector-borne diseases, degradation of air quality, reduced ability to enjoy outdoors, and potential economic impacts due to uncertainty and changing conditions.

Climate change disproportionately affects those with existing disadvantages. Low-income communities and communities of color often live in areas with conditions that expose them to

more severe hazards, such as higher temperatures and worse air quality. These communities also have fewer financial resources to adapt to these hazards. For instance, low-income populations may reduce air conditioning usage out of concerns about cost. Outdoor workers, individuals with mobility constraints, and sensitive populations such as the very young, elderly, and poor, as well as those with chronic health conditions, are particularly at risk of climate change hazards.

To understand how climate change might affect the service area, the Cal-Adapt tool was used to analyze data. Cal-Adapt provides a way to explore peer-reviewed data that portrays how climate change might affect California at the state and local level (cal-adapt.com). It's important to note that the Cal-Adapt tool is limited to a drop-down list of cities, counties, census tracts, and watershed areas. As such, since the majority of Rowland Water District is within the County's unincorporated area known as Rowland Heights. Below is a summary of the data reviewed for Rowland Heights.

Climate Change Hazards

Increased Temperature: Annual maximum temperatures in Rowland Heights are expected to rise steadily through the end of the century. The community's historical average maximum temperatures based on data from 1961-1990, is 77.5°F. Under the medium emissions scenario, the average annual maximum temperature is projected to increase to 81.5°F. Between 2070 and 2099 the annual average maximum temperature under the high-emission scenario is projected to increase to 85.6°F.

More Extreme Heat Days: Extreme heat days occur when the maximum temperature is above 100.5°F. Historically, Rowland Heights has experienced an average of 3 extreme heat days per year. By mid-century, 2025-2064, the annual number of extreme heat days is expected to rise to 13 under medium emission scenarios and 16 under high emission scenarios. By the end of the centuries, 2070 and 2099, the number of extreme heat days is expected to rise to 17 under medium emission scenarios and 35 under high emission scenarios.

Static Annual Precipitation: Historically the community has experienced an annual average of 16.7 inches of precipitation. Annual precipitation is expected to slightly increase during the mid-century. Under the medium emission scenario, it is expected that the annual precipitation will remain steady at 16.3 inches. Under the high emission scenario, it is expected that the annual precipitation will increase to 16.5 inches. By the end of the century annual precipitation is expected to increase to 16.9 inches under the medium emission scenario and 16.5 inches under the high emission scenario.

Longer and more extreme droughts: The community can expect to see an 11.6% increase in average temperature and a 26.8% decrease in precipitation during drought conditions. This will lead to longer, more extreme droughts by mid-century.

Steady wildfire threat: Based on historical data from 1961–1990, Los Angeles County experiences a decadal average loss of 4,436.1 hectares to wildfire. The probability that a wildfire will occur in any one year over a10-year period, known as the decadal probability, is projected to remain constant through 2099 under both high-emissions and low emissions scenarios. Under the low-emissions scenario, the decadal average loss to wildfire is expected to increase to 5,719.2 hectares by mid-century and 5662.9 hectares by 2099. Under the high-

emissions scenario, the decadal average loss to wildfire is projected to rise to 5,579.7 hectares by 2065 and 5,275.4 hectares by the end of the century.

Demographics

The District provides water service to an area with a current population of 59,283. Table: Population – Current and Projected presents the current and projected population of the area encompassed by the District's service area from FY 2019-20 to FY 2044-45. The District is projected to have a population of 61,387 by FY 2044-45.

Projected populations in the District's service area were based on growth rate projections obtained from data provided by the Southern California Association of Governments (SCAG). The data provided by SCAG was based on their "The 2020-2045 Regional Transportation Plan / Sustainable Communities Strategy of the SCAG", dated September 2020, and incorporates demographic trends, existing land use, general plan land use policies, and input and projections through the year 2045 from the Department of Finance (DOF) and the US Census Bureau for counties, cities and unincorporated areas within Southern California.

Table: Population – Current and Projected
(Source: Rowland Water District 2020 Urban Water Management Plan, 2022)

Submittal Table 3-1 Retail: Population - Current and Projected						
Population Served	2020	2025	2030	2035	2040	2045*(opt)*
	59,283	59,714	60,147	60,584	60,984	61,387
NOTES: The 2020 population and the populations projected through 2045 is based on the annual growth rate estimated in SCAG's 2020-2045 Regional Transportation Plan applied to the 2018 population obtained from the United States Census Bureau's American Community Survey (See Section 3.4.1 and Section 5.4.1).						

Land Use

The District reviewed the current and projected land uses within its service area during the preparation of this 2020 Plan. Information regarding current and projected land uses is included in the Los Angeles County 2035 General Plan. The existing land uses within the District's service area include residential (single-family and multi-family), commercial, and open space. Based on the Los Angeles County 2035 General Plan, the projected land uses within the District's service area are expected to remain similar to the existing land uses. In addition, although mostly built-out, the projected population within the District's service area is anticipated to increase.

Table: Projected Water Use by Use Types
(Source: Rowland Water District 2020 Urban Water Management Plan)

Use Type	Additional Description (as needed)	Projected Water Use[2] *Report To the Extent that Records are Available*				
Drop down list May select each use multiple times These are the only Use Types that will be recognized by the WUEdata online submittal tool		2025	2030	2035	2040	2045 (opt)
Add additional rows as needed						
Single Family		4,591	4,597	4,604	4,607	4,611
Multi-Family		1,424	1,426	1,428	1,429	1,430
Commercial		4,956	4,963	4,970	4,974	4,977
Losses		644	645	646	647	647
Other		24	24	24	24	24
	TOTAL	11,639	11,655	11,672	11,681	11,689

The Use Types as defined in the California Water Code include:
• Single-family residential (A single-family dwelling unit is a lot with a free-standing building containing one dwelling unit that may include a detached secondary dwelling. Single-family residential water demands are included in retail demands.)

• Multi-family (Multiple dwelling units are contained within one building or several buildings within one complex. Multi-family residential water demands are included in retail demands.)

• Commercial (Commercial users are defined as water users that provide or distribute a product or service.)

• Landscape (Landscape connections supply water solely for landscape irrigation. Landscapes users may be associated with multi-family, commercial, industrial, or institutional/governmental sites, but are considered a separate water use sector if the connection is solely for landscape irrigation. Landscape water demands are included in retail demands.)

• Distribution system losses (Distribution system losses represent the potable water losses from the pressurized water distribution system and water storage facilities, up to the point of delivery to the customers.)

Environmental Justice

Environmental justice is the movement to recognize and ameliorate the disproportionate and unfair burden of environmental pollution and other toxins faced by low-income communities and communities of color. In 2016, Senate Bill 1000 was signed into law which requires local jurisdictions that have disadvantaged communities to incorporate environmental justice policies into their general plans. *Although Rowland Water District is not required to maintain a general plan, the jurisdictions they serve do. Therefore, the Planning Team thought it best to satisfy the requirements regarding environmental justice.*

For the purpose of local government general plan requirements, environmental justice is defined as: “the fair treatment and meaningful involvement of people of all races, cultures, incomes, and national origins, with respect to the development, adoption, implementation, and enforcement of

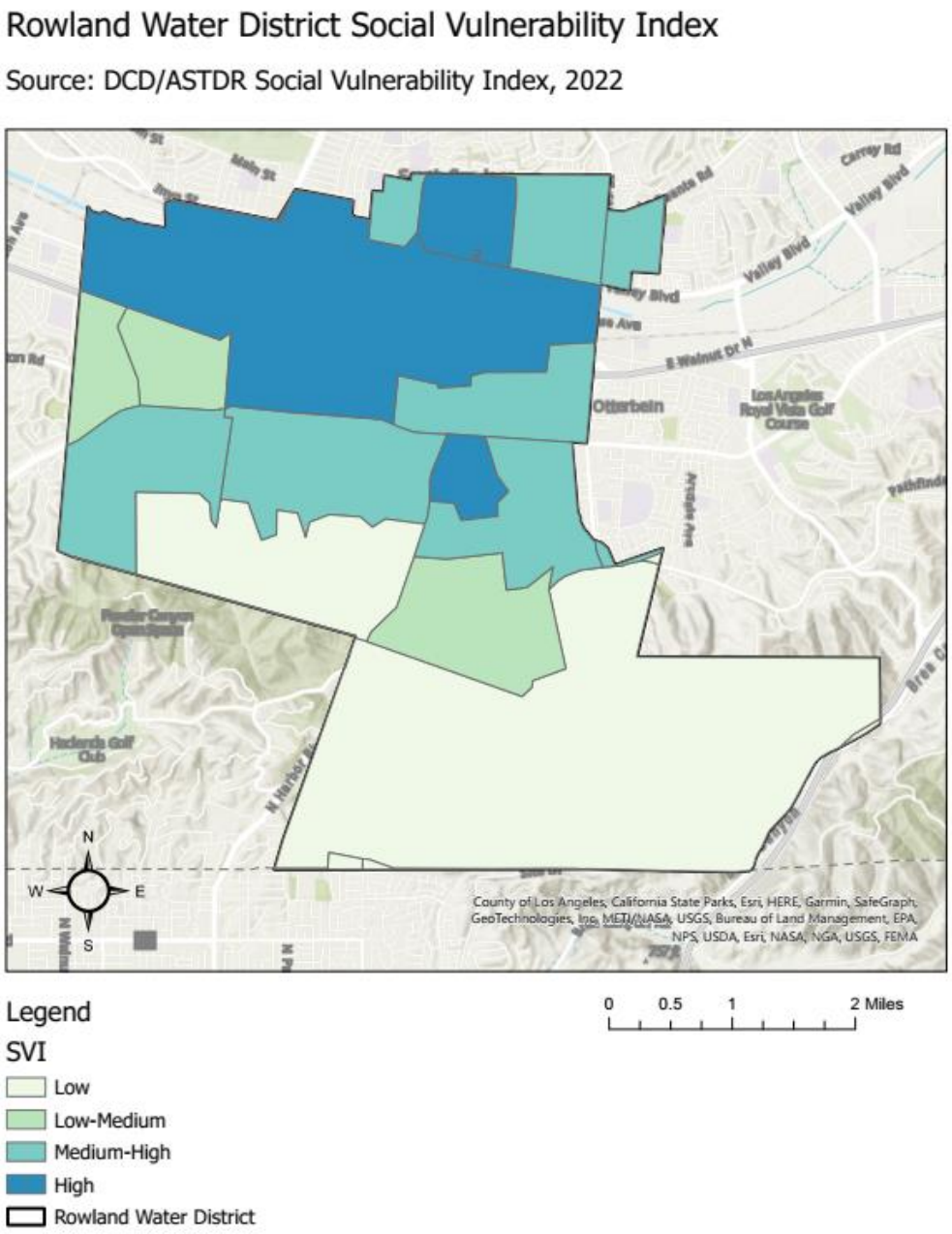
environmental laws, regulations, and policies" (California Government Code Section 65040.12). Residents living in or neighborhoods with high levels of pollution are at an increased risk for developing respiratory diseases, such as asthma, and cardiovascular diseases, such as stroke. Pregnant women living in highly polluted neighborhoods are also at an increased risk for experiencing poor birth outcomes, such as preterm birth. The environmental justice movement is intended to address these types of inequities by addressing the specific environmental hazards faced by disadvantaged communities.

Social Vulnerability

Social vulnerability considerations were included in this plan to identify populations across the City that might be more vulnerable to hazards. Social Vulnerability refers to a community's capacity to prepare for and respond to the stress of hazardous events ranging from natural disasters such as tornadoes or disease outbreaks, to human caused threats such as toxic chemical spills (CDC/ATSDR, 2020). To better assist emergency planners, the CDC Agency for Toxic Substances and Disease Registry (CDC/ATSDR) developed the Social Vulnerability Index (SVI) as a way to depict the social vulnerability of communities, as the census tract level within a specified county. Tracts with a higher SVI will likely need support before, during and after a hazardous event. The SVI can help public health officials and local planners better prepare for and respond to emergency events by displaying what areas of the jurisdiction have a high vulnerability ranking to low vulnerability ranking.

The map below (Figure: Social Vulnerability Index) depicts the SVI map for the Rowland Water District. There are 3 census tracts within the district boundary that have a high SVI, 8 census tracts that have a medium-high SVI, 3 census tracts that have a low-medium SVI, and 5 census tracts that have a low SVI. The high SVI rated census tracts area depicted in the darker blue areas on the map. And the lightest blue represents the low-medium SVI census tracts.

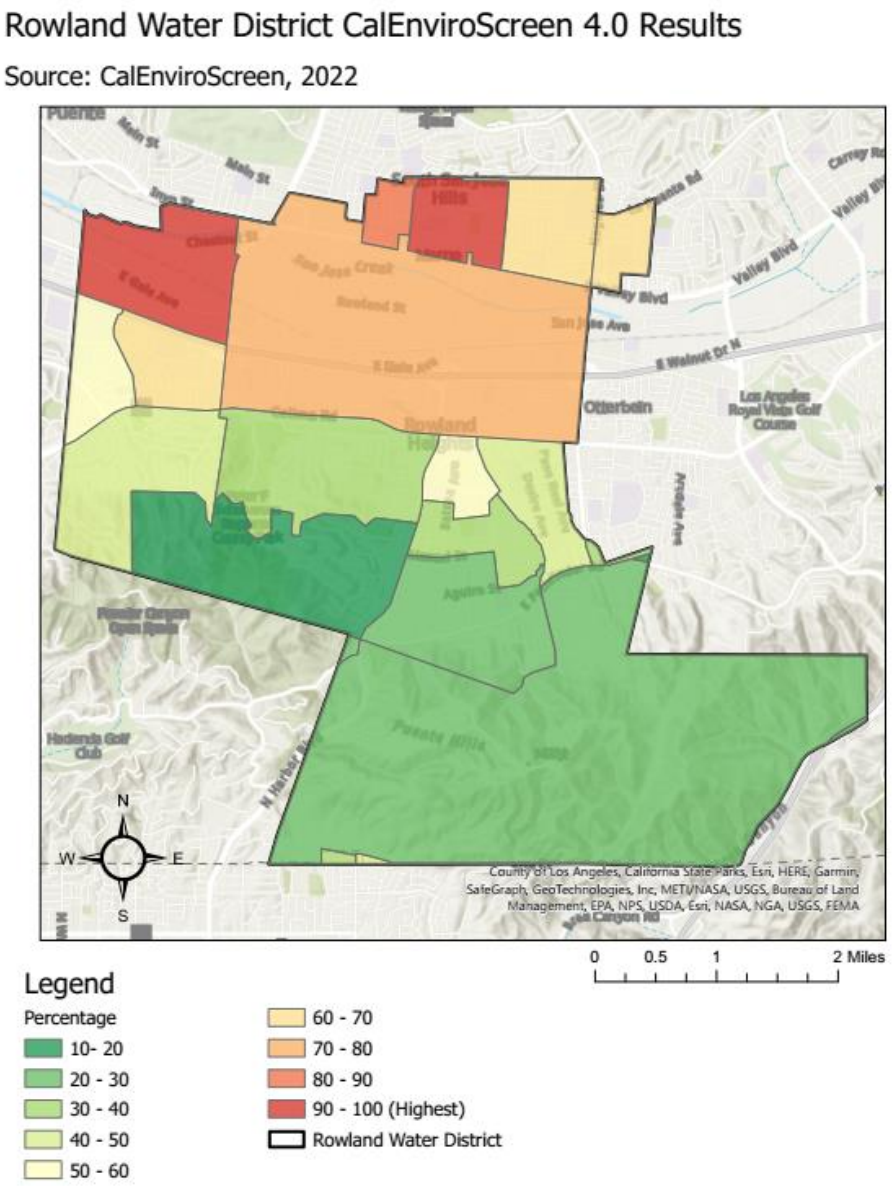
Figure: Social Vulnerability Index (SVI)
(Source: CDC/ATSDR, 2020)



The census tracts depicted in the SVI maps correspond to the California Office of Environmental Health Hazard Assessment (OEHHA) CalEnviroScreen 4.0 mapping tool and census tract datasets. The CalEnviroScreen 4.0 is a mapping tool that helps identify California communities that are most affected by many sources of pollution, where people are often especially vulnerable to pollution's effects. CalEnviroScreen ranks census tracts in California based on potential exposures to pollutants, adverse environmental conditions, socioeconomic factors and the prevalence of certain health conditions. Those census tracts with a higher overall percentile

score have a higher pollution burdens and population sensitives. These tracts are depicted in the darker red colors on the map. Census tracts with lower overall percentile scores have a lower pollution burdens and population sensitivities. These tracts are depicted in a darker green color on the map. The Rowland Water District CalEnviroScreen percentages are between the 10 and 10 overall percentile range. The majority of the district is between 10 and 70 percentile range.

Figure: CalEnviroScreen 4.0 Results
(Source: CalEnviroScreen, 2023)



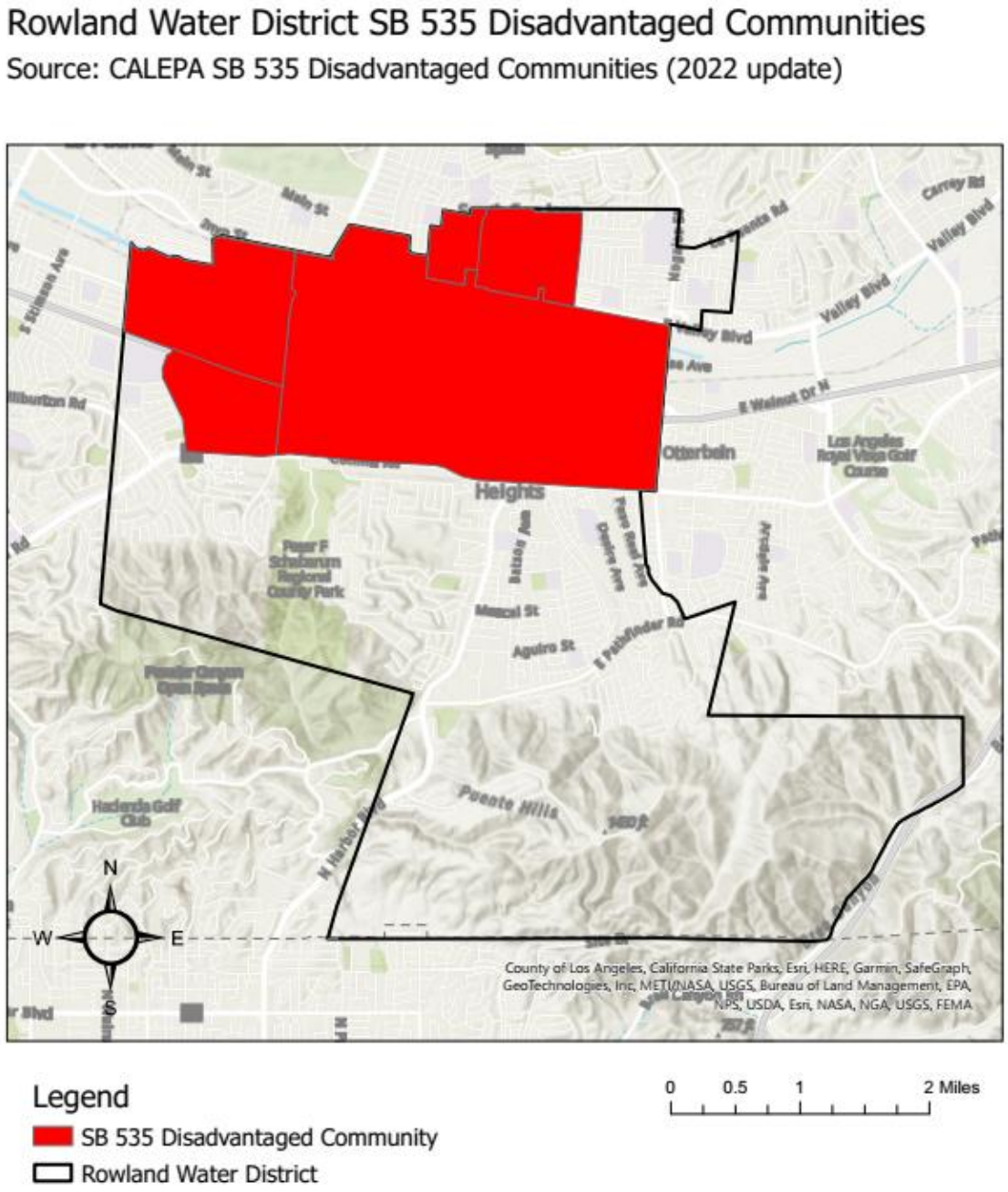
Identification of Disadvantaged Communities

SB 1000 defines “disadvantaged communities” as areas identified by the California Environmental Protection Agency pursuant to Section 39711 of the Health and Safety Code or as an area that is low-income that is disproportionately affected by environmental pollution and other hazards that can lead to negative health effects, exposure, or environmental degradation. To assist in identifying disadvantaged communities, the State has provided a mapping tool called “CalEnviroScreen.” CalEnviroScreen uses several factors, called “indicators” that have been shown to determine whether a community is disadvantaged and disproportionately affected by pollution. Pollution burden indicators measure different types of pollution that residents may be exposed to, and the proximity of environmental hazards to a community. Population characteristics represent characteristics of the community that can make them more susceptible to environmental hazards.

CalEnviroScreen provides an overall percentile score determined by combining weighted individual scores for all the individual indicators analyzed. SB 1000 considers a 75 percent or higher score in this category to be a qualifier for consideration as a disadvantaged community. The overall scores are represented in a statewide map, with red representing the highest percentile range and green representing the lowest. Areas with higher scores generally experience higher pollution burdens and fare poorly on a range of health and socioeconomic indicators than areas with low scores.

The majority of the Rowland Water District is not considered a disadvantaged community based on the CalEnviroScreen scores. However, there are 5 census tracts that are designated as a disadvantaged community. These census tracts are depicted in red on the map below.

Figure: Rowland Water District SB 535 Disadvantaged Communities
(Source: CALEPA SB 535 Disadvantaged Communities, 2022)



Risk Assessment

What is a Risk Assessment?

Conducting a risk assessment can provide information regarding: the location of hazards; the value of existing land and property in hazard locations; and an analysis of risk to life, property, and the environment that may result from natural hazard events. Specifically, the four levels of a risk assessment are as follows:

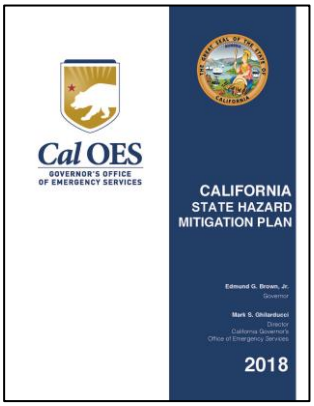
1. *Hazard Identification*
2. *Profiling Hazard Events*
3. *Inventory of Assets*
4. *Estimation of Potential Human and Economic Losses Based on the Exposure and Vulnerability of People, Buildings, and Infrastructure*

Q&A | ELEMENT B: RISK ASSESSMENT | B1-a.

Q: Does the plan describe all natural hazards that can affect the jurisdiction(s) in the planning area, and does it provide the rationale if omitting any natural hazards that are commonly recognized to affect the jurisdiction(s) in the planning area? (Requirement 44 CFR § 201.6(c)(2)(i))

A: See **Hazard Identification** below.

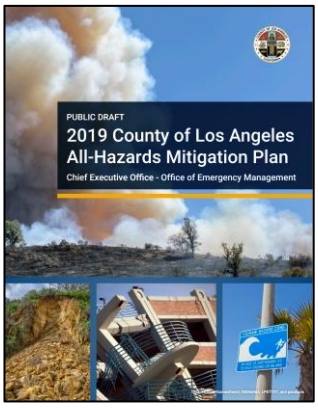
Hazard Identification



This section is the description of the geographic extent, potential intensity, and the probability of occurrence of a given hazard. Maps are used in this plan to display hazard identification data. To determine the hazard with significant potential to impact to the full project area (PWAG footprint), the Planning Team examined three resources: California's 2018 State Hazard Mitigation Plan, 2019 County of Los Angeles All-Hazards Mitigation Plan, and historical observations from the Planning Team members. Additionally, many of the participating agencies have Urban Water Management Plans which include hazard-related information.

The 2018 State HMP identified hazards posing a threat to communities within the state boundaries. Those hazards include Earthquakes, Floods, Levee Failures, Wildfires, Landslides and Earth Movements, Tsunami, Climate-Related Hazards, Volcanoes, and Other Hazards.

The 2019 County of Los Angeles AHMP identified hazards posing a threat to communities within the county's boundary. Those hazards include Earthquake, Climate Change, Flood, Dam Failure, Drought, Landslide, Tsunami, and Wildfire.



Next, the MJHMP Planning Team reviewed the state and county documents to determine which of the hazards posed the most significant threat to the project area and the ability of the participating agencies to deliver services. *In other words, which hazard would likely result in a local declaration of emergency.*

The geographic extent of each of the identified hazards was identified by the Planning Team utilizing maps and data contained in the 2019 County of Los Angeles All-Hazards Mitigation Plan.

The following hazards identified in the AHMP have been included in the MJHMP: Dam Failure, Drought, Earthquake, Flood, and Wildfire. The Planning Team chose to add Windstorm and Utility-Related.

The following hazards identified in the AHMP were omitted from inclusion in MJHMP:

- ✓ Landslide – Based on input from the Planning Team, landslide does not pose a significant threat to any of the participating agencies.
- ✓ Tsunami – Due to proximity from the hazard, the Planning Team determined that tsunami does not pose a significant threat to any of the participating agencies.
- ✓ Climate Change – Rather than a stand-alone hazard section, the Planning Team chose to include a "Climate Change Summary" at the end of each Hazard-Specific chapter within the Risk Assessment section. Additionally, the District Profile includes information on the Climate Vulnerability and Adaptation Assessment as well as information on underserved and socially vulnerable populations.

Next, the Team utilized FEMA's Calculated Priority Risk Index (CPRI) ranking technique to quantify the probability, maximum strength, during, and warning time for each of the hazards. The hazard ranking system is described below.

Table: Calculated Priority Risk Index
(Source: Federal Emergency Management Agency)

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 damage (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	

Table: Calculated Priority Risk Index Ranking for the MJHMP Project Area (PWAG Footprint) (Source: Planning Team, Emergency Planning Consultants)

Hazards Identified in Los Angeles County All-Hazards Mitigation Plan (2019)	Probability	Weighted 45% (x.45)	Magnitude Severity	Weighted 30% (x.3)	Warning Time	Weighted 15% (x.15)	Duration	Weighted 10% (x.1)	CPRI Total	Hazard Priority Ranking* (H-High, M-Medium, L-Low)
Dam Failure	2	0.90	2	0.60	1	0.15	1	0.10	**1.75**	**L**
Drought	4	1.80	1	0.30	1	0.15	4	0.40	**2.65**	**M**
Earthquake	3	1.35	4	1.20	4	0.60	1	0.10	**3.25**	**H**
Flooding	2	0.90	1	0.30	1	0.15	1	0.10	**1.45**	**L**
Landslide	1	0.45	1	0.30	3	0.45	1	0.40	**1.60**	**N/A**
Utility-Related	3	1.35	2	0.60	4	0.60	2	0.20	**2.27**	**M**
Wildfire	2	0.90	1	0.30	1	0.15	4	0.40	**1.75**	**L**
Windstorm	2	0.90	1	0.30	1	0.15	4	0.40	**1.75**	**L**
Tsunami	1	0.45	1	0.30	3	0.45	1	0.40	**1.60**	**N/A**

Hazard Priority Ranking
High=CPRI score for probability + magnitude/severity (impact) = 6 or higher
Medium=CPRI score for probability + magnitude/severity (impact) = 5
Low=CPRI score for probability + magnitude/severity (impact) = 3 or 4
N/A=CPRI score for probability + magnitude/severity (impact) = 2

Table: Calculated Priority Risk Index Ranking for Rowland Water District (Source: RWD Planning Team, Emergency Planning Consultants)

Hazard Priorities for MJHMP Project Area	Probability	Weighted 45% (x.45)	Magnitude Severity	Weighted 30% (x.3)	Warning Time	Weighted 15% (x.15)	Duration	Weighted 10% (x.1)	CPRI Total	Hazard Priority Ranking* (H-High, M-Medium, L-Low)
Dam Failure	1	0.45	1	0.30	1	0.15	1	0.10	**1.00**	**N/A**
Drought	4	1.80	1	0.30	1	0.15	4	0.40	**2.65**	**M**
Earthquake	3	1.35	4	1.20	4	0.60	1	0.10	**3.25**	**H**
Flooding	2	0.90	1	0.30	1	0.15	1	0.10	**1.45**	**L**
Utility Related	3	1.35	2	0.60	4	0.60	1	0.10	**2.65**	**M**
Wildfire	3	1.35	2	0.60	4	0.60	2	0.20	**2.75**	**M**
Windstorm	2	0.90	1	0.30	1	0.15	4	0.40	**1.75**	**L**

Hazard Priority Ranking
High=CPRI score for probability + magnitude/severity (impact) = 6 or higher
Medium=CPRI score for probability + magnitude/severity (impact) = 5
Low=CPRI score for probability + magnitude/severity (impact) = 3 or 4
N/A=CPRI score for probability + magnitude/severity (impact) = 2

Profiling Hazard Events

Q&A | ELEMENT B: RISK ASSESSMENT | B1-a.
Q: Does the plan describe all natural hazards that can affect the jurisdiction(s) in the planning area, and does it provide the rationale if omitting any natural hazards that are commonly recognized to affect the jurisdiction(s) in the planning area? (Requirement 44 CFR § 201.6(c)(2)(i)) **A:** See **Table: Hazard Profile of Location, Extent, and Probability for MJHMP and Rowland Water District** below.
Q&A | ELEMENT B: RISK ASSESSMENT | B1-b.
Q: Does the plan include information on the location of each identified hazard? (Requirement 44 CFR § 201.6(c)(2)(i)) **A:** See **Table: Hazard Profile of Location, Extent, and Probability for MJHMP Rowland Water District** below.
Q&A | ELEMENT B: RISK ASSESSMENT | B1-c.
Q: Does the plan describe the extent for each identified hazard? (Requirement 44 CFR § 201.6(c)(2)(i)) **A:** See **Table: Hazard Profile of Location, Extent, and Probability for MJHMP Rowland Water District** below.
Q&A | ELEMENT B: RISK ASSESSMENT | B1-d.
Q: Does the plan include the history of **previous** hazard events for each identified hazard? (Requirement 44 CFR § 201.6(c)(2)(i)) **A:** See **Table: Hazard Profile of Location, Extent, and Probability for MJHMP Rowland Water District** below.
Q&A | ELEMENT B: RISK ASSESSMENT | B1-e.
Q: Does the plan include the probability of future events for each identified hazard? Does the plan describe the effects of future conditions, including climate change (e.g., long-term weather patterns, average temperature and sea levels), on the type, location and range of anticipated intensities of identified hazards? (Requirement 44 CFR § 201.6(c)(2)(i)) **A:** See **Table: Hazard Profile of Location, Extent, and Probability for Rowland Water District** below.

This process describes the causes and characteristics of each hazard and which of the RWD facilities, infrastructure, and environment may be vulnerable. **Table: Hazard Profile of Location, Extent, and Probability for Rowland Water District** indicates a generalized perspective of the district's vulnerability of the various hazards according to extent (or degree), location, and probability.

Table: Hazard Profile of Location, Extent, and Probability for MJHMP Project Area (Source: MJHMP Planning Team, Emergency Planning Consultants)

Hazard	Location (Where)	Extent (How Big an Event)	Probability (How Often) *	Most Recent Significant Occurrence
Dam Failure	Vicinities adjacent to Rio Hondo Flood Control Channel and San Gabriel River. Within the PWAG boundary, the most northerly members could be impacted by Little Rock and/or Harold Reservoirs.	Water depth inundation between (10-40 feet) along Rio Hondo Flood Control Channel and San Gabriel River. Water depth inundation between 0-15 feet for Little Rock and Harold Reservoirs.	Possible	No significant events on record.
Drought	Entire Service Area	Droughts in urban areas vary considerably in scope and intensity. Likely emergency water shortage regulations would restrict such activities as watering of landscape, washing of cars, and other non-safety related activities.	Possible	Water providers following Governor Newsom's Executive Order N-7-22 on March 22, 2022 calling on urban water suppliers to implement actions to reduce water usage by 20-30 percent, depending on local conditions.
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. Earthquake would most likely originate from the San Andreas fault.	Possible	The most recent damaging earthquake was the M6.7 Northridge Earthquake in 1994.
Flood	Urban flooding localized to intersections and underpasses. Flood channels at Rio Hondo and San Gabriel.	Urban flooding results primarily in streets and underpasses from heavy rains. Flood channels can exceed capacity in heavy rains.	Possible	California Severe Winter Storms, Flooding, and Mudslides (DR-4305), January 18, 2017-January 23, 2017
Utility Related	Entire Project Area	Public Safety Power Shutoff poses significant threat to water providers and customers.	Likely	2023
Wildfire	Southeast area within 2 miles of Very High Fire Hazard Severity Zone	Several agencies have structures in the State/Local Responsibility Area designated as Very High Fire Hazard Severity Zone.	Likely	The Bobcat Fire in 2020 burned from Monrovia to Juniper Hills destroying 170 structures including 87 residences.
Windstorm	Entire Project Area	50 miles per hour or greater.	Possible	January 2023 brought gusts as high as 100 mph to numerous areas in Los Angeles County.

* Probability is defined as: Unlikely = 1:1,000 years, Possibly = 1:100-1:1,000 years, Likely = 1:10-1:100 years, Highly Likely = 1:1 year

[1] Uniform California Earthquake Rupture Forecast

Table: Hazard Profile of Location, Extent, and Probability for Rowland Water District (Source: MJHMP Planning Team, Emergency Planning Consultants)

Hazard	Location (Where)	Extent (How Big an Event)	Probability (How Often) *	Most Recent Significant Occurrence
Dam Failure	N/A	N/A	Unlikely	No significant events on record.
Drought	Entire Service Area	Droughts in urban areas vary considerably in scope and intensity. Likely emergency water shortage regulations would restrict such activities as watering of landscape, washing of cars, and other non-safety related activities.	Highly Likely	RWD following Governor Newsom's Executive Order N-7-22 on March 22, 2022, calling on urban water suppliers to implement actions to reduce water usage by 20-30 percent, depending on local conditions.
Earthquake	Entire Service 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. Earthquake would most likely originate from the San Andreas fault.	Possible	The most recent damaging earthquake was the M6.7 Northridge Earthquake in 1994.
Flood	Urban flooding localized to intersections and underpasses.	Urban flooding results primarily in streets and underpasses from heavy rains.	Possible	California Severe Winter Storms, Flooding, and Mudslides (DR-4305), January 18,2017-January 23, 2017
Utility Related	Entire Service Area	Public Safety Power Shutoff poses significant threat to RWD staff, facilities, and customers.	Likely	2023
Wildfire	East and west of RWD Headquarters	State/Local Responsibility Area designated as Very High Fire Hazard Severity Zone.	Likely	2008 Freeway Complex Fire
Windstorm	Entire Service Area	50 miles per hour or greater.	Possible	2011 Winds – Trees Down / Debris Removal
* Probability is defined as: Unlikely = 1:1,000 years, Possibly = 1:100-1:1,000 years, Likely = 1:10-1:100 years, Highly Likely = 1:1 year				
[1] Uniform California Earthquake Rupture Forecast				

HAZUS-MH

The hazard maps in the Mitigation Plan were generated by Emergency Planning Consultants using FEMA's Hazards United States – Multi Hazard (HAZUS-MH) software program. Please see **Attachments – HAZUS** for complete reports. Once the location and size of a hypothetical earthquake are identified, HAZUS-MH estimates the intensity of the ground shaking, the number of buildings damaged, the number of casualties, the amount of damage to transportation systems and utilities, the number of people displaced from their homes, and the estimated cost of repair and clean up. It's important to note that the "project are" is based on Census Tracts not jurisdictional boundaries.

As per FEMA's HAZUS Guidebook, HAZUS is a GIS-based software that can be used to estimate potential damage, economic loss, and social impacts from earthquakes, flooding, tsunami and hurricane wind hazards. The HAZUS software includes nationwide general GIS datasets, and a model for the four natural disasters below. The model results can support the risk assessment piece of mitigation planning.

Graphic: Model Results to Support Risk Assessment for Mitigation Planning
(Source: Using HAZUS for Mitigation Planning, Federal Emergency Management Agency, 2018)

Earthquake model 	Estimates damages and losses to buildings, essential facilities, transportation, and utility lifelines from a single scenario or probabilistic earthquake analysis. There are also tools that allow the user to integrate earthquake hazard data generated outside of Hazus into the earthquake model. This model estimates debris generation, shelter requirements, casualties, and fire following an earthquake disaster.
Flood model 	Generates flood hazard data using nationwide hydrological datasets. There are also tools that allow the user to integrate flood hazard data generated outside of Hazus software into the flood model. This model estimates the expected levels of damage to infrastructure and buildings. Debris generation and shelter requirements, as well as agricultural losses, can be calculated with this model.
Tsunami model 	Can produce analyses that have several pre-tsunami and/or post-tsunami applications. Use of the methodology will generate an estimate of the consequences to a county or region of a "scenario tsunami," i.e., a tsunami with a specified inundation depth, velocity, and location. The resulting "loss estimate" generally will describe the scale and extent of damage and disruption that may result from the scenario tsunami.
Hurricane wind model 	Can create the wind hazard data from a historical or real-time event, probabilistic event, or from a user-defined scenario. Estimates of potential damage and economic loss to buildings can then be calculated. The storm surge analysis combines the wind and coastal flood model to simulate storm surge for historical, and manual hurricanes. The model combines the wind and flood losses.

HAZUS is packaged with datasets that include building inventories and infrastructure for the entire United States. Because HAZUS is currently built on GIS technology, the inventory and infrastructure datasets can be mapped and intersected with the hazard information created from the four models.

Following the intersection, HAZUS determines the effects of wind, ground shaking, and water depths on buildings and infrastructure to calculate losses and damages. The outputs and estimates can be used in hazard mitigation planning, emergency response, and planning for recovery and reconstruction.

Losses estimated in HAZUS are based on the accuracy of input data. Basic analysis can be developed using the default data and parameter data provided within HAZUS. Users can conduct more advanced analysis using more accurate data that is specific to the region, hazard, population, etc. User-supplied data improves the accuracy of inventories and/or parameters.

Advanced-level analyses may also incorporate data from third-party studies. The user must determine the appropriate level of analysis to meet the user's needs and resources.

HAZUS analysis can be performed at three different levels:

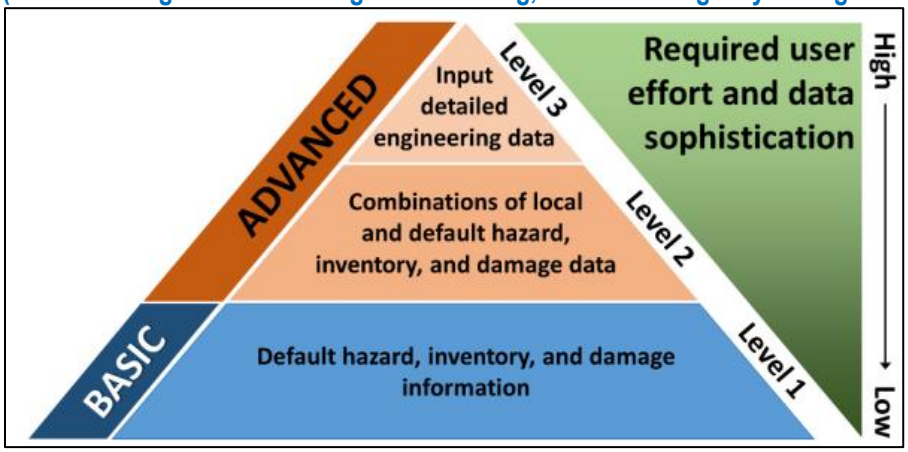
- A Level 1 basic analysis can be performed simply using the default data provided. This level of analysis is very coarse, and because the results will be subject to a much higher level of uncertainty, this should serve primarily as a baseline for further study. The user will still be able to produce basic maps and results. Limited additional data will be required to complete the flood analysis. Site specific input data produces more accuracy in vulnerability identification and loss estimation amounts. If the data is available, it is highly recommended that a user integrate site specific data to reduce uncertainty associated with the results of default data. Using a user defined depth grid, in the flood model, against default state data is classified as a level 1 analysis and is the recommendation of HAZUS Program.

- A Level 2 advanced analysis increases the accuracy and precision of an analysis by incorporating user-supplied data relevant to a given hazard. While the data included with the HAZUS software can be utilized to run a basic level one analysis, level two inputs are supplied by local sources and contain a higher level of detail. This can include datasets that model the hazards in more detail, or datasets that increase the accuracy of the inventory information. Incorporating more detailed data will improve the quality of the results. Level 2 is broadly defined as the incorporation of user-defined hazard and updated GBS or site-specific data.

- A Level 3 advanced analysis achieves the highest degree of precision and involves modifying or substituting the model parameters and/or equations, relevant to a given hazard. Users can modify inputs depending on the time and resources available. Keeping track of the data used is suggested so that any relationships between input and results is documented. It is usually done by advanced users experienced with both the hazard and the HAZUS software.

FEMA's Natural Hazard Risk Assessment Program (NHRAP) encourages users to conduct Level 2 or 3 analyses to improve the accuracy of results and recommends the use of user defined data (e.g., depth grids for all flood analysis) for mitigation planning.

Graphic: HAZUS Analysis Levels
(Source: Using HAZUS for Mitigation Planning, Federal Emergency Management Agency, 2018)



HAZUS creates credible estimates for losses and damages; datasets created on the local level typically provide greater detail than the datasets that are packaged with HAZUS (Level 1). Incorporating local datasets into the analysis will improve the results.

HAZUS Outputs

The user plays a major role in selecting the scope and nature of the output of a HAZUS analysis. A variety of maps can be generated for visualizing the extent of the losses. Numerical results may be examined at the level of the census block or tract or may be aggregated by county or region. There are three main categories of HAZUS outputs: direct physical damage, induced damage, and direct losses. Direct physical damage includes general building stock (GBS), essential facilities, high potential loss facilities, transportation systems, utility systems, and user defined facilities. Induced damage includes building debris, tree debris generation and fire following disaster occurrence. Direct losses include losses for buildings, contents, inventory, income, crop damage, vehicle loss, injuries, casualties, sheltering needs and displaced households.

Graphic: HAZUS Outputs
(Source: Using HAZUS for Mitigation Planning, Federal Emergency Management Agency, 2018)

Hazus Capabilities	**Earthquake** Ground Shaking Ground Failure	**Flood** Frequency | Depth Riverine | Coastal Surge	**Hurricane** Wind | Surge	**Tsunami** Depth | Momentum Flux | Runup | Velocity
Inputs				
Historic	✓		✓	
Deterministic	✓	✓	✓	✓
Probabilistic	✓	✓	✓	
User-supplied	✓	✓	✓	✓
Other supported inputs	Real-time & scenario USGS ShakeMaps	Risk MAP, User-supplied depth grids (ArcGRID, GeoTIFF, IMAGINE), HEC-RAS (.FLT)	Hurrevac, User-supplied wind files (.dat)	NOAA PMEL SIFT, State models
Direct Damage				
General Building Stock	✓	✓	✓	✓
Essential Facilities	✓	✓	✓	
Transportation Systems	✓	✓		
Utility Systems	✓	✓		
User-Defined Facilities	✓	✓	✓	✓
Induced Damage				
Fire Following	✓			
Debris Generation	✓	✓	✓	
Direct Losses				
Cost of Repair	✓	✓	✓	✓
Income Loss	✓	✓	✓	✓
Agricultural		✓		
Casualties	✓			✓
Shelter and/or Evacuation Needs	✓	✓	✓	✓
Average Annualized Loss (AAL)	✓	✓	✓	

Inventory of Assets and Estimation of Potential Human and Economic Losses Based on the Exposure and Vulnerability of People, Buildings, and Infrastructure

A vulnerability assessment in its simplest form is a simultaneous look at the geographical location of hazards and an inventory of the underlying land uses (populations, structures, etc.). Facilities that provide critical and essential services following a major emergency are of particular concern because these locations house staff and equipment necessary to provide important public safety, emergency response, and/or disaster recovery functions.

Q&A | ELEMENT B: RISK ASSESSMENT | B2-a.

Q: Does the plan provide an overall summary of each jurisdiction's vulnerability to the identified hazards? (Requirement 44 CFR § 201.6(c)(2)(ii))

A: See **Hazard Proximity to Critical Facilities** below.

FEMA separates critical buildings and facilities into the five categories shown below based on their loss potential. All of the following elements are considered critical facilities:

Essential Facilities are essential to the health and welfare of the whole population and are especially important following hazard events. Essential facilities include hospitals and other medical facilities, police and fire stations, emergency operations centers and evacuation shelters, and schools.

Transportation Systems include airways – airports, heliports; highways – bridges, tunnels, roadbeds, overpasses, transfer centers; railways – trackage, tunnels, bridges, rail yards, depots; and waterways – canals, locks, seaports, ferries, harbors, drydocks, piers.

Lifeline Utility Systems such as potable water, wastewater, oil, natural gas, electric power and communication systems.

High Potential Loss Facilities are facilities that would have a high loss associated with them, such as nuclear power plants, dams, and military installations.

Hazardous Material Facilities include facilities housing industrial/hazardous materials, such as corrosives, explosives, flammable materials, radioactive materials, and toxins.

Table: Critical Facility Hazards and Values below illustrates the hazards with potential to impact critical facilities owned by Rowland Water District.

Table: Critical Facilities Hazards and Values
(Source: RWD Planning Team, Emergency Planning Consultants)
(Based on CPRI Medium/High Hazard Priority Rankings)

Facility Name and Type (RH-Rowland Heights, HH-Hacienda Heights, LP-La Puente	# Occupants	# Buildings	$ Building Value	$ Contents Value	$ Total Value	Hazard - Drought	Hazard - Earthquake	Hazard - Utility	Hazard - Wildfire
District Headquarters: Administrative building, warehouse, storage unit, Fullerton Booster Station, Reservoirs #1, #5, #11 (3021 Fullerton Road, RH)	26	3	$18,823,368	$1,116,924	$19,940,292	X	X	X	X
Reservoirs #2 & #16 Granby Booster Station (18940 Granby Place, RH)	0	2	$7,808,144	N/A	$7,808,144	X	X	X	
Reservoirs #3 & #13 (3062 Blandford Drive, RH)	0	0	$2,535,366	N/A	$2,535,366	X	X	X	X
Reservoirs #4 & #9 Artigas Booster Station (2505 Artigas Drive, RH)	0	1	$3,465,432	N/A	$3,465,432	X	X	X	X
Reservoir #6 (2024 Tomich Road, HH)	0	1	$4,797,823	N/A	$4,797,823	X	X	X	
Reservoir #7 (17052 Glenford Drive, HH)	0	0	$2,221,553	N/A	$2,221,553	X	X	X	X
Reservoir #8 (2633 Saleroso Drive, RH)	0	1	$1,870,167	N/A	$1,870,167	X	X	X	X
Reservoir #10 Harbor Booster Station (4000 N. Harbor Boulevard, RH)	0	1	$2,558,240	N/A	$2,558,240	X	X	X	X
Reservoir #12 Ashbourne Booster Station (3400 Ashbourne Place, RH)	0	1	$1,850,227	N/A	$1,850,227	X	X	X	X
Reservoir #14 (18724 Vantage Point Drive, RH)	0	0	$1,677,193	N/A	$1,677,193	X	X	X	X
Reservoir #15 (2774 Carlton Place, RH)	0	0	$1,816,799	N/A	$1,816,799	X	X	X	X
2A Booster Station (747 Anaheim-Puente Road, RH)	0	0	$782,020	N/A	$782,020	X	X	X	
Cuatro Booster Station (2366 Cuatro Drive, RH)	0	0	$43,644	N/A	$43,644	X	X	X	
Well #1 (850 Kern Creek Court, RH)	0	0	$727,753	N/A	$727,753	X	X	X	
PM22 (Nogales & Colima, RH)	0	0	$214,663	N/A	$214,663	X	X	X	
Sentous (Sentous & La Puente, LP)	0	0	$195,851	N/A	$195,851	X	X	X	
PM9 505 North Grand Avenue, Walnut	0	0	$68,718	N/A	$68,718	X	X	X	
Joint Line- JLR1 & JLR2 (21889 Buckskin Drive, Walnut)	0	1	$10,264,100	N/A	$10,264,100	X	X	X	X
TOTAL	26	11	$62,726,361	$1,116,924	**$62,837,985**				

Q&A | ELEMENT D: PLAN UPDATE | E1-a.

Q: Does the plan describe the changes in development that have occurred in hazard-prone areas that have increased or decreased each community's vulnerability since the previous plan was approved? (Requirement 44 CFR § 201.6(d)(3))

A: See **Changes in Development** below.

Changes in Development

As discussed earlier in the District Profile, the land uses in the service area are primarily comprised of single-family residential, multi-family residential, and commercial. Only a slight increase in the number of single-family homes over the next 20 years is projected. As such, RWD can expect to see no significant increase in vulnerability in the service area.

Earthquake Hazards

Hazard Definition

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. The effects of an earthquake can be felt far beyond the site of its occurrence. They usually occur without warning and, after just a few seconds, can cause massive damage and extensive casualties. Common effects of earthquakes are ground motion and shaking, surface fault ruptures, and ground failure.

Photo: Northridge Earthquake Damage 1994
(Source: Los Angeles Times)

One tool used to describe earthquake intensity is the Magnitude Scale. The Magnitude Scale is sometimes referred to as the Richter Scale. The two are similar but not exactly the same. The Magnitude Scale was devised as a means of rating earthquake strength and is an indirect measure of seismic energy released. The Scale is logarithmic with each one-point increase corresponding to a 10-fold increase in the amplitude of the seismic shock waves generated by the earthquake. In terms of actual energy released, however, each one-point increase on the Richter scale corresponds to about a 32-fold increase in energy released. Therefore, a Magnitude 7 (M7) earthquake is 100 times (10 X 10) more powerful than a M5 earthquake and releases 1,024 times (32 X 32) the energy.

Table: Mercalli Scale and Peak Ground Acceleration Comparison
(Source: USGS)

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

a. PGA = peak ground acceleration. Measured in percent of g, where g is the acceleration of gravity
Sources: USGS, 2008; USGS, 2010

Q&A | ELEMENT B: RISK ASSESSMENT | B1-d.

Q: Does the plan include the history of previous hazard events for each identified hazard? (Requirement 44 CFR § 201.6(c)(2)(i))

A: See **Previous Occurrences of Earthquakes in the RWD** below.

Previous Occurrences of Earthquakes in the Rowland Water District

According to the Planning Team, the most recent earthquake to cause damage in RWD was the Magnitude 5.9 Whittier Earthquake in 1987.

Previous Occurrences of Earthquakes in Los Angeles County

According to the County of Los Angeles All-Hazards Mitigation Plan (2019), significant earthquakes in the county over the past 50 years included the following:

Date	Location	Impact
July 6, 2019	Ridgecrest (M 7.1)	Fires reported as a result of gas leaks No reported major injuries, deaths or major building damage
March 28, 2014	La Habra (M 5.1)	Few injuries and $10 million dollars in damage
July 29, 2008	Chino Hills (M 5.5)	8 injuries and limited damages
January 17, 1994	Northridge (M 6.7)	57 deaths, 8,700 injuries and up to $40 billion dollars in damages
June 28, 1991	Sierra Madre (M 5.6)	1 death, 100+ injuries and up to $40 million dollars in damages
February 28, 1990	Upland (M 5.7)	30 injuries and $12.7 million dollars in damages
October 1, 1987	Whitter (M 5.9)	8 deaths, 200 injuries and $358 million in damages
February 9, 1971	San Fernando (M 6.6)	58 – 65 deaths, 200 – 2,000 injuries and up to $553 million in damages

Q&A | ELEMENT B: RISK ASSESSMENT | B1-a.

Q: Does the plan describe all natural hazards that can affect the jurisdiction(s) in the planning area, and does it provide the rationale if omitting any natural hazards that are commonly recognized the jurisdiction(s) in the planning area? (Requirement 44 CFR § 201.6(c)(2)(i))

A: See **Local Conditions** below.

Q&A | ELEMENT B: RISK ASSESSMENT | B1-b.

Q: Does the plan include information on the location of each identified hazard? (Requirement 44 CFR § 201.6(c)(2)(i))

A: See **Local Conditions** below.

Local Conditions

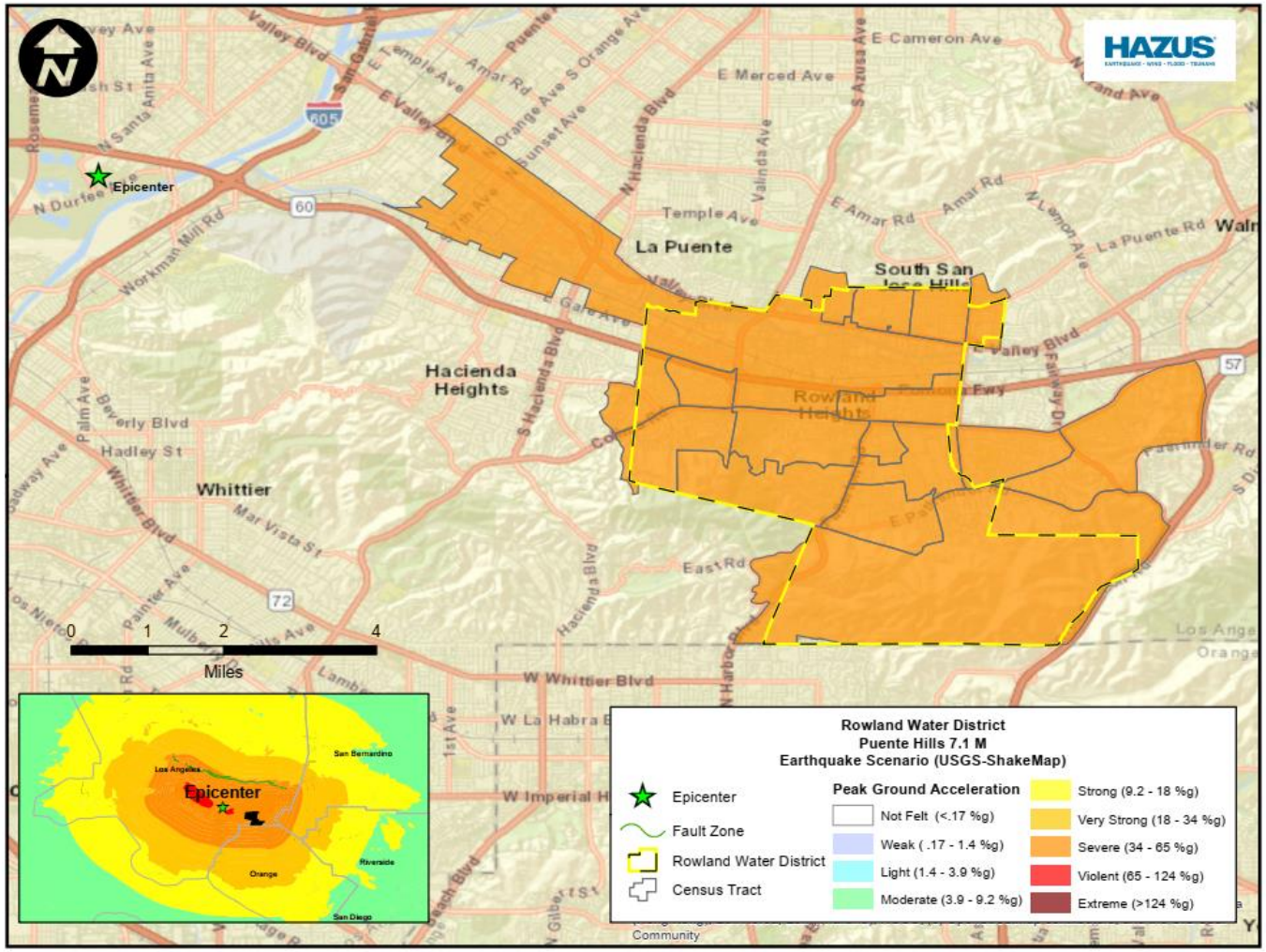
According to the UWMP, the California Geological Survey has published the locations of numerous faults which have been mapped in the Southern California region. Although the San Andreas Fault is the most recognized and is capable of producing an earthquake with a magnitude greater than 8 on the Richter Scale, some of the lesser-known faults have the potential to cause significant damage. The locations of these earthquake faults in the vicinity of the District'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 the District's water service area include the San Andreas Fault, the Walnut Creek Fault, the Whittier Fault, the San Jose Fault, the Cucamonga Fault, the Chino Fault, the Central Avenue Fault, and the Sierra Madre

Fault. Equally important is the Puente Hills Fault which was identified in 1999 and considered to pose the greatest threat to RWD due to proximity.

Puente Hills Fault

The Puente Hills Fault is an active geological fault that was discovered in 1999 and runs about 40 km (25 mi) in three discrete sections from the Puente Hills region in the southeast to just south of Griffith Park in the northwest. The fault is known as a blind thrust fault, as the fault plane does not extend to the surface. Large earthquakes on the fault are relatively infrequent but computer modeling has indicated that a major event could have substantial impact in the Los Angeles area. The fault is now thought to be responsible for one moderate earthquake in 1987 (the 1987 Whittier Narrows earthquake) and another light event that took place in 2010, with the former causing considerable damage and deaths.

Map: HAZUS – Puente Hills M7.1
(Source: Emergency Planning Consultants, 2023)



Southern San Andreas Fault

The San Andreas Fault is a continental right-lateral strike-slip transform fault that extends roughly 1,200 kilometers through the Californias. It forms the tectonic boundary between the Pacific Plate and the North American Plate. Traditionally, for scientific purposes, the fault has been classified into three main segments (northern, central, and southern), each with different characteristics and a different degree of earthquake risk. The average slip rate along the entire fault ranges from 0.79 to 1.38 inches per year.

In the north, the fault terminates offshore near Eureka, where three tectonic plates meet. It has been hypothesized that a major earthquake along the subduction zone could rupture the San Andreas Fault and vice versa. In the south, the fault terminates near Bombay Beach in the Salton Sea. Here, the plate motion is being reorganized from right-lateral to divergent. In this region, the plate boundary has been rifting and pulling apart, creating a new mid-ocean ridge that is an extension of the Gulf of California. Sediment deposited by the Colorado River is preventing the trough from being filled in with sea water from the gulf.

Whittier Fault

The Whittier Fault is a 25 mile right-lateral strike-slip fault that runs along the Chino Hills range between the cities of Chino Hills and Whittier. The fault has a slip rate of 0.098 to 0.118 inches per year. It is estimated that this fault could generate a quake of M 6.0–7.2 on the moment magnitude scale.

Earthquake Related Hazards

Ground shaking, landslides, and liquefaction are the specific hazards associated with earthquakes. The severity of these hazards depends on several factors, including soil and slope conditions, proximity to the fault, earthquake magnitude, and the type of earthquake.

Ground Shaking

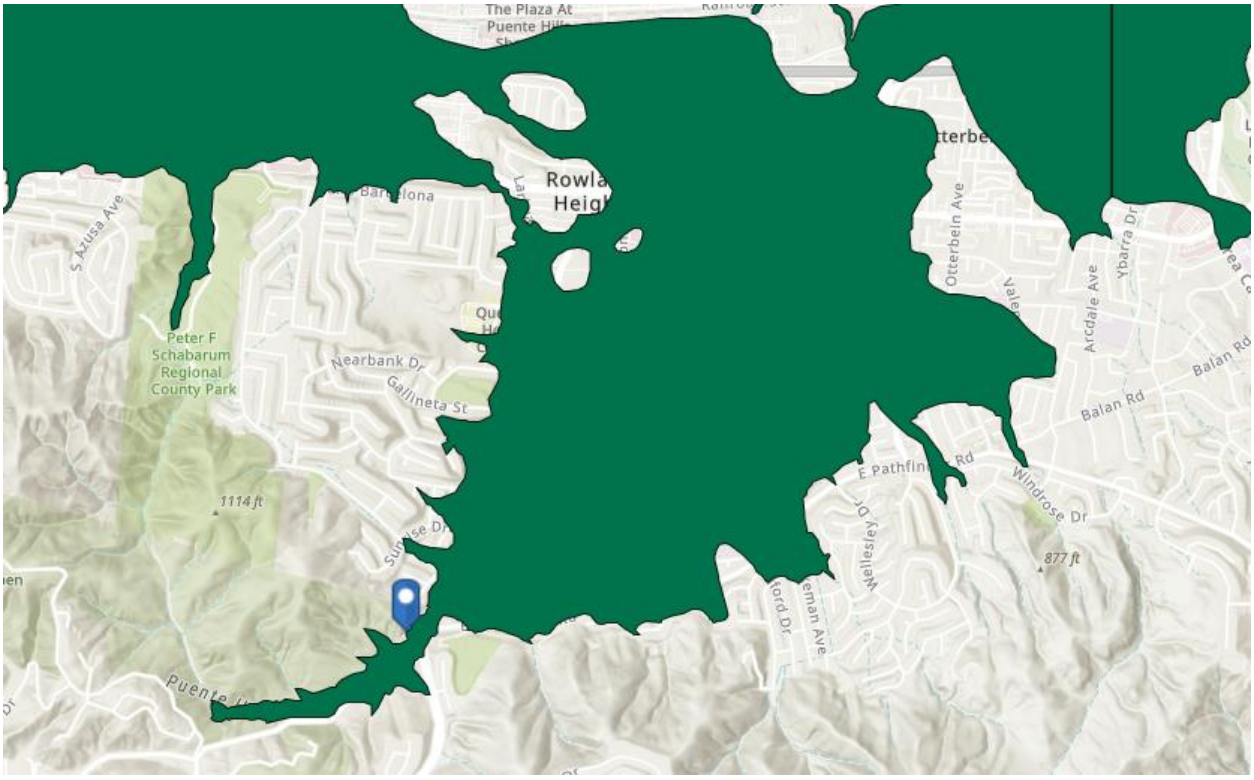
Ground shaking is the motion felt on the earth's surface caused by seismic waves generated by the earthquake. It is the primary cause of earthquake damage. The strength of ground shaking depends on the magnitude of the earthquake, the type of fault, and distance from the epicenter (where the earthquake originates). Buildings on poorly consolidated and thick soils will typically see more damage than buildings on consolidated soils and bedrock.

Liquefaction

Liquefaction is a phenomenon in which the strength and stiffness of a soil is reduced by earthquake shaking or other events. Liquefaction occurs in saturated soils, which are soils in which the space between individual soil particles is completely filled with water. This water exerts a pressure on the soil particles that influences how tightly the particles themselves are pressed together. Prior to an earthquake, the water pressure is relatively low. However, 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, which is less than 50 feet beneath the earth’s surface.

According to the California Department of Conservation – Earthquake Zones of Required Information (2023), liquefaction presents the most prominent secondary earthquake ground failure issue in the RWD service area. Liquefaction-related lateral spreads can occur adjacent to stream channels and deep washes that provide a free face toward which the liquefied mass of soil fails. Lateral spreads can cause extensive damage to pipelines, utilities, bridges, roads and other structures.

Map: Liquefaction Areas
(Source: California Department of Conservation – Earthquake Zones of Required Information, 2023)
Note: Blue marker is RWD, Liquefaction shown in green



Q&A | ELEMENT B: RISK ASSESSMENT | B2-b.

Q: For each participating jurisdiction, does the plan describe the potential impacts of each of the identified hazards on each participating jurisdiction? (Requirement 44 CFR § 201.6(c)(2)(ii))
A: See **Impacts from Earthquakes in Rowland Water District** below.

Impacts from Earthquakes in Rowland Water District

Based on the risk assessment, it is evident that earthquakes will continue to have potentially devastating economic impacts to the service area. 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
- ✓ Secondary health hazards e.g., mold and mildew

- ✓ Damage to roads/bridges resulting in loss of mobility
- ✓ Significant economic impact (jobs, sales, tax revenue) upon the community
- ✓ Negative impact on commercial and residential property values, and
- ✓ Significant disruption to citizens as temporary facilities and relocations would likely be needed

Issues Relating to Earthquakes

Important issues associated with an earthquake include the following:

- ✓ Almost half of the service area is prone to liquefaction.
- ✓ Structures on these soils may experience significant structural damage.
- ✓ It is estimated more than a third of the service area's building stock was built prior to 1975, when seismic provisions became uniformly applied through building code applications. Many structures may need seismic retrofits in order to withstand a moderate earthquake. Residential retrofit programs, such as Earthquake Brace+Bolt, may be able to assist in the costs of these efforts.
- ✓ Due to limitations in current modeling abilities, the risk to critical facilities in the planning area from the earthquake hazard is likely understated. A more thorough review of the age of critical facilities, codes they were built to, and location on liquefiable soils should be conducted.
- ✓ Damage to transportation systems in the planning area after an earthquake has the potential to significantly disrupt response and recovery efforts and lead to isolation of populations.
- ✓ Earthquakes can cause fires in wooden homes and the collapse of essential buildings such as fire stations.
- ✓ Landslides and tsunamis are major secondary hazards that could have a widespread effect on the county.
- ✓ Citizens are expected to be self-sufficient up to two weeks after a major earthquake without government response agencies, utilities, private-sector services, and infrastructure components. Education programs are currently in place to facilitate development of individual, family, neighborhood, and business earthquake preparedness. It takes individuals, families, and communities working in concert with one another to be prepared for disaster.
- ✓ After a major seismic event, the planning area is likely to experience disruptions in the flow of goods and services resulting from the destruction of major transportation infrastructure across the broader region.
- ✓ A seismic event can damage communication systems, complicating efforts to coordinate response to the event.

Q&A | ELEMENT B: RISK ASSESSMENT | B2-a.
Q: Does the plan provide an overall summary of each jurisdiction's vulnerability to the identified hazards? (Requirement 44 CFR § 201.6(c)(2)(ii)) **A:** See **Summary of Vulnerability to Earthquakes** below.

Summary of Vulnerability to Earthquakes

The following is a summary of vulnerability to earthquakes. All of RWD's 26 occupants would be impacted by an earthquake. In addition, all of the RWD-owned facilities would be impacted by an earthquake including District Headquarters, Reservoirs #1, #2, #3, #4, #5, #6, #7, #8, #9,

#10, #11, #12, #13, #14, #15, #16, Fullerton Booster Station, Granby Booster Station, Artigas Booster Station, Tomich Booster Station, Harbor Booster Station, Ashbourne Booster Station, 2A Booster Station, Cuatro Booster Station, Well #1, PM22, Sentous, PM9, and Joint Line-JLR1 & JLR2. Altogether, this includes a total of approximately 26 occupants, 11 buildings, and property/contents valued at $62,837,985. These estimates are based on 2023.

The combination of plate tectonics and associated geology generates earthquakes as a result of the periodic release of tectonic stresses. Los Angeles County's terrain lies in the center of the North American and Pacific tectonic plate activity. There have been earthquakes as a result of this activity in the historic past, and there will continue to be earthquakes in the future of California. Fault ruptures themselves contribute very little to damage unless the structure or system element crosses the active fault; however, liquefaction can occur further from the source of the earthquake. In general, newer construction is more earthquake resistant than older construction due to enforcement of improved building codes. Manufactured buildings are very susceptible to damage because their foundation systems are rarely braced for earthquake motions. Locally generated earthquake motions and associated liquefaction, even from very moderate events, tend to be more damaging to smaller buildings, especially those constructed of unreinforced masonry (URM) and soft story buildings.

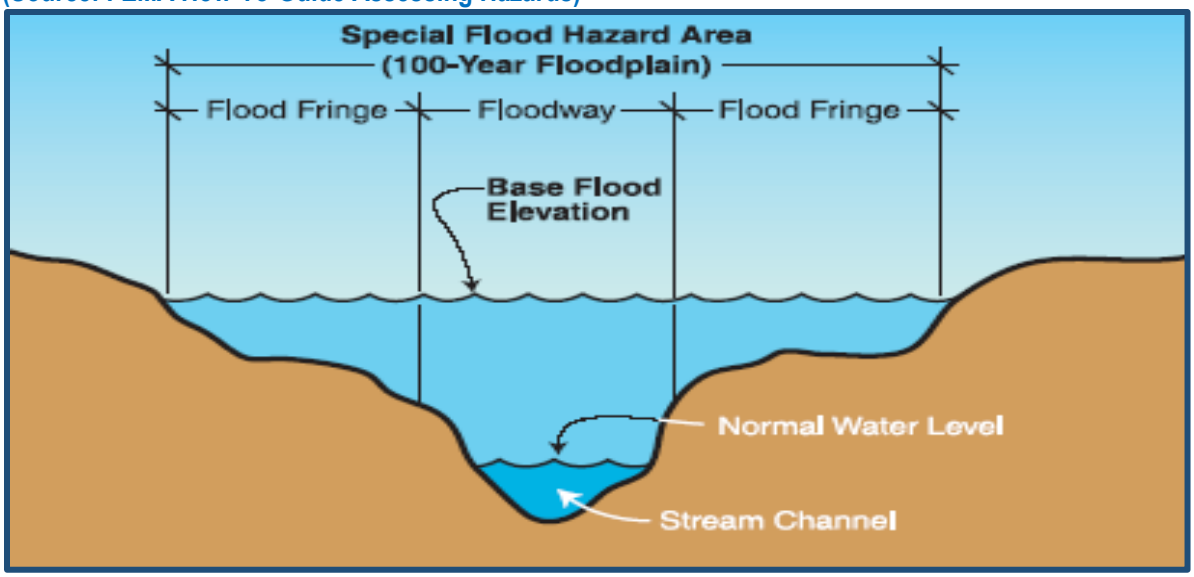
Impacts from earthquakes in the service area will vary depending on the fault that the earthquake occurs on, the depth of the earthquake strike, and the intensity of shaking. Should ground shaking be intense, District facilities and critical infrastructure could be damaged or destroyed. Of greater risk than the building is the students and staff who occupy those buildings; injury or loss of life could occur during a significant event. In addition to earthquakes causing structural damage, the District has multiple non-structural components that may be damaged during earthquake shaking. Nonstructural components include furnishings and equipment, electrical and mechanical fixtures, and architectural features such as suspended ceilings, partitions, cabinets, and shelves. In general, nonstructural components and building contents become hazards when they slide, break, fall, or tip over during an earthquake. Securing the nonstructural components and building contents will improve safety and security of the facility.

Flood Hazards

Hazard Definition

A floodplain is a land area adjacent to a river, stream, lake, estuary, or other water body that is subject to flooding. This area, if left undisturbed, acts to store excess flood water. The floodplain is made up of two sections: the floodway and the flood fringe. The 100-year flooding event is the flood having a one percent chance of being equaled or exceeded in magnitude in any given year. Contrary to popular belief, it is not a flood occurring once every 100 years. The 100-year floodplain is the area adjoining a river, stream, or watercourse covered by water in the event of a 100-year flood. Schematic: Floodplain and Floodway shows the relationship of the floodplain and the floodway.

Figure: Floodplain and Floodway
(Source: FEMA How-To-Guide Assessing Hazards)



Types of Flooding

Two types of flooding primarily affect the region: slow-rise or flash flooding. Slow-rise floods 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.

For the RWD service area, floodplains are controlled by infrastructure while localized or urban flooding continues to pose a problem from time to time.

Q&A | ELEMENT B: RISK ASSESSMENT | B1-d.
Q: Does the plan include the history of previous hazard events for each identified hazard? (Requirement 44 CFR § 201.6(c)(2)(i))
A: See **Previous Occurrences of Flooding in Rowland Water District** below.

Previous Occurrences of Flooding in Rowland Water District

Flooding has not been a serious hazard to the RWD service area, and the risk of serious flooding in the District is considered low. The RWD service area does not lie within a 100- or 500- year floodplain, as delineated by the Federal Emergency Management Agency (FEMA). However, the potential for a localized flood event still exists and therefore is still important to discuss as a hazard.

Presidential Disaster Declarations were issued for California Severe Winter Storms, Flooding, and Mudslides (DR-4305) for the period of January 18, 2017-January 23, 2017. Heavy rains resulted in urban flooding of several streets and underpasses within the service area.

Historic Flooding in Southern California

According to the 2022 County of Los Angeles General Plan – Safety Element, historic flooding records in the county show that since 1811, the Los Angeles River has flooded 30 times, on average once every 6.1 years. But averages are deceiving, for the Los Angeles basin goes through periods of drought and then periods of above average rainfall. Between 1889 and 1891, the river flooded every year, from 1941 to 1945, the river flooded 5 times. Conversely, from 1896 to 1914, and again from 1944 to 1969, a period of 25 years, the river did not have serious floods.

Average annual precipitation in Los Angeles County ranges from 13 inches on the coast to approximately 40 inches on the highest point of the Peninsular Mountain Range that transects the county. Several factors determine the severity of floods, including rainfall intensity and duration. A large amount of rainfall over a short time span can result in flash flood conditions. A sudden thunderstorm or heavy rain, dam failure, or sudden spills can cause flash flooding. The National Weather Service's definition of a flash flood is a flood occurring in a watershed where the time of travel of the peak of flow from one end of the watershed to the other is less than six hours.

The towering mountains that give the Los Angeles region its spectacular views also bring a great deal of rain out of the storm clouds that pass through. Because the mountains are so steep, the rainwater moves rapidly down the slopes and across the coastal plains on its way to the ocean.

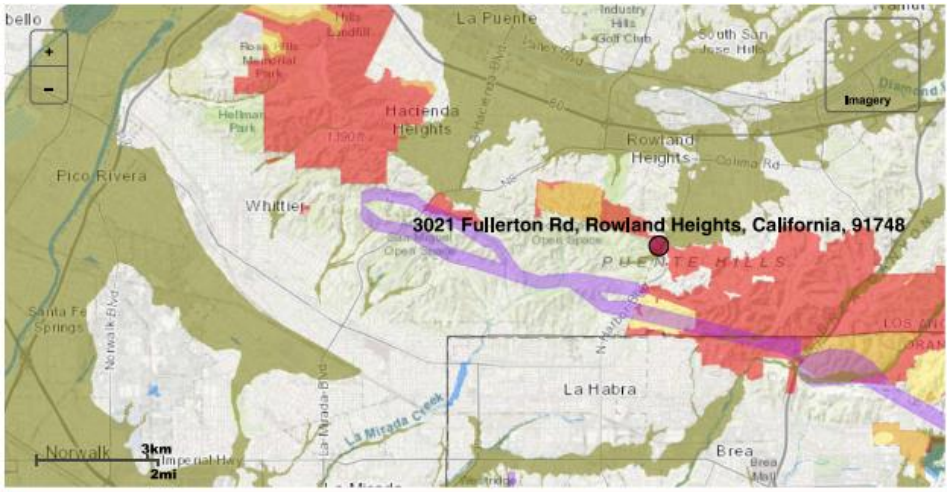
The Santa Monica, Santa Susana and Verdugo Mountains, which surround three sides of the valley, seldom reach heights above three thousand feet. The western San Gabriel Mountains, in contrast, have elevations of more than seven thousand feet. These higher ridges often trap eastern-moving winter storms. Although downtown Los Angeles averages just fifteen inches of rain a year, some peaks in the San Gabriel Mountains receive more than forty inches of precipitation annually, as much as many locations in the humid eastern United States" (Source: The Los Angeles River: It's Life, Death, and Possible Rebirth, Gumprecht 2001). Naturally, this rainfall moves rapidly downstream, often with severe consequences for anything in its path. In extreme cases, flood-generated debris flows will roar down a canyon at speeds near 40 miles per hour with a wall of mud, debris and water, tens of feet high. Flooding occurs when climate, geology, and hydrology combine to create conditions where water flows outside of its usual course.

Q&A | ELEMENT B: RISK ASSESSMENT | B1-a.
Q: Does the plan describe all natural hazards that can affect the jurisdiction(s) in the planning area, and does it provide the rationale if omitting any natural hazards that are commonly recognized the jurisdiction(s) in the planning area? (Requirement 44 CFR § 201.6(c)(2)(i)) **A:** See **Local Conditions** below.
Q&A | ELEMENT B: RISK ASSESSMENT | B1-b.
Q: Does the plan include information on the location of each identified hazard? (Requirement 44 CFR § 201.6(c)(2)(i)) **A:** See **Local Conditions** below.

Local Conditions

According to MyHazards (Cal OES online mapping resource), the RWD service area does not have any 100- or 500-year floodplains.

Map: RWD MyHazards
(Source: Cal OES)



California_Tsunami_Hazard_Areas

Liquefaction Zone of Required Investigation

Liquefaction Zone Area

100-Year Floodplains

FEMA/DWR Awareness/Regional Studies /USACE Comprehensive Study

Earthquake Fault Zone of Required Investigation

State Responsibility Areas (2007), Severity

SRA, Very High

SRA, High

SRA, Moderate

The State Responsibility Area (SRA) is the area of the state where the State of California is financially responsible for the prevention and suppression of wildfires. SRA does not include lands within city boundaries or in federal ownership. FEMA's Flood Map Service Center (https://msc.fema.gov/portal/)

Q&A | ELEMENT C: MITIGATION STRATEGY | C2-a.
Q: Does the plan contain a narrative description or a table/list of their participation activities? (Requirement 44 CFR § 201.6(C)(3)(ii) **A:** See **National Flood Insurance Program** below.

National Flood Insurance Program

The district is not eligible to participate 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.

Definitions of FEMA Flood Zone Designations

Flood zones are geographic areas that the FEMA has defined according to varying levels of flood risk. These zones are depicted on a community's Flood Insurance Rate Map (FIRM) or Flood Hazard Boundary Map. Each zone reflects the severity or type of flooding in the area.

Moderate to Low Risk Areas

In communities that participate in the NFIP, flood insurance is available to all property owners and renters in these zones:

ZONE	DESCRIPTION
B and X (shaded)	Area of moderate flood hazard, usually the area between the limits of the 100-year and 500-year floods. B Zones are also used to designate base floodplains of lesser hazards, such as areas protected by levees from 100-year flood, or shallow flooding areas with average depths of less than one foot or drainage areas less than 1 square mile.
C and X (unshaded)	Area of minimal flood hazard usually depicted on FIRMs as above the 500-year flood level. Zone C may have ponding and local drainage problems that do not warrant a detailed study or designation as base floodplain. Zone X is the area determined to be outside the 500-year flood and protected by levee from 100-year flood.

High Risk Areas

In communities that participate in the NFIP, mandatory flood insurance purchase requirements apply to all of these zones:

ZONE	DESCRIPTION
A	Areas with a 1% annual chance of flooding and a 26% chance of flooding over the life of a 30-year mortgage. Because detailed analyses are not performed for such areas; no depths or base flood elevations are shown within these zones.
AE	The base floodplain where base flood elevations are provided. AE Zones are now used on new format FIRMs instead of A1-A30 Zones.
A1-30	These are known as numbered A Zones (e.g., A7 or A14). This is the base floodplain where the FIRM shows a BFE (old format).

ZONE	DESCRIPTION
AH	Areas with a 1% annual chance of shallow flooding, usually in the form of a pond, with an average depth ranging from 1 to 3 feet. These areas have a 26% chance of flooding over the life of a 30-year mortgage. Base flood elevations derived from detailed analyses are shown at selected intervals within these zones.
AO	River or stream flood hazard areas, and areas with a 1% or greater chance of shallow flooding each year, usually in the form of sheet flow, with an average depth ranging from 1 to 3 feet. These areas have a 26% chance of flooding over the life of a 30-year mortgage. Average flood depths derived from detailed analyses are shown within these zones.
AR	Areas with a temporarily increased flood risk due to the building or restoration of a flood control system (such as a levee or a dam). Mandatory flood insurance purchase requirements will apply, but rates will not exceed the rates for unnumbered A zones if the structure is built or restored in compliance with Zone AR floodplain management regulations.
A99	Areas with a 1% annual chance of flooding that will be protected by a Federal flood control system where construction has reached specified legal requirements. No depths or base flood elevations are shown within these zones.

Undetermined Risk Areas

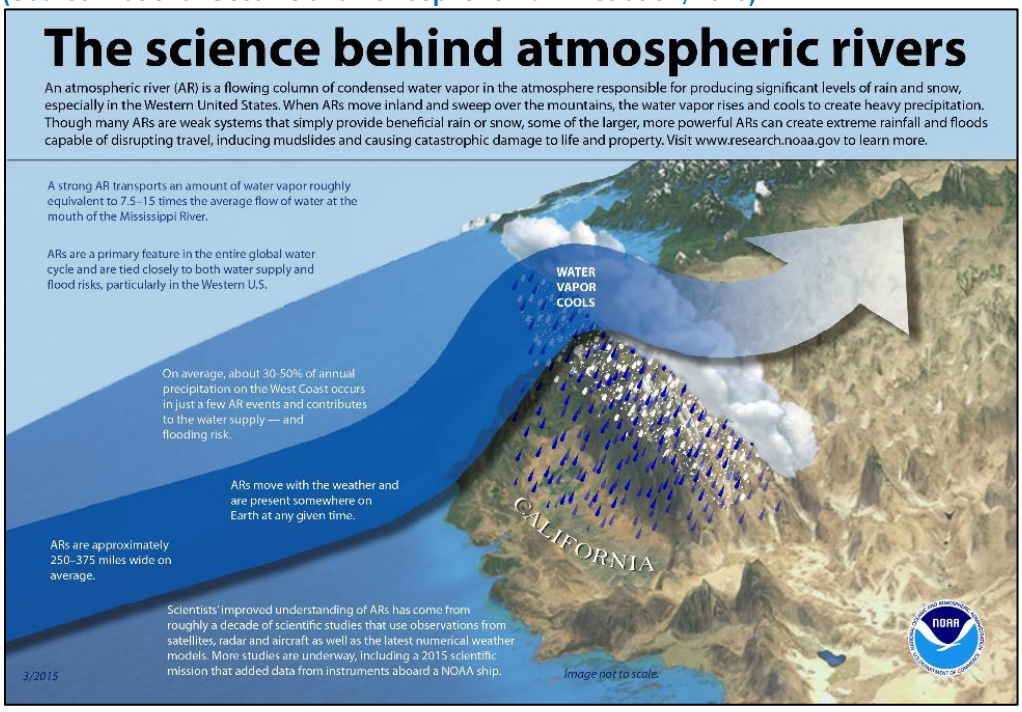
ZONE	DESCRIPTION
D	Areas with possible but undetermined flood hazards. No flood hazard analysis has been conducted. Flood insurance rates are commensurate with the uncertainty of the flood risk.

Atmospheric Rivers

According to the National Oceanic and Atmospheric Administration (NOAA), atmospheric rivers are relatively long, narrow regions in the atmosphere – like rivers in the sky – that transport most of the water vapor outside of the tropics. These columns of vapor move with the weather, carrying an amount of water vapor roughly equivalent to the average flow of water at the mouth of the Mississippi River. When the atmospheric rivers make landfall, they often release this water vapor in the form of rain or snow.

Although atmospheric rivers come in many shapes and sizes, those that contain the largest amounts of water vapor and the strongest winds can create extreme rainfall and floods, often by stalling over watersheds vulnerable to flooding. These events can disrupt travel, induce mudslides, and cause catastrophic damage to life and property. A well-known example is the "Pineapple Express," a strong atmospheric river that can bring moisture from the tropics near Hawaii over to the U.S. West Coast.

Graphic: Atmospheric Rivers
(Source: National Oceanic and Atmospheric Administration, 2023)



While atmospheric rivers are responsible for great quantities of rain that can produce flooding, they also contribute to beneficial increases in snowpack. A series of atmospheric rivers fueled the strong winter storms that battered the U.S. West Coast from western Washington to southern California from December 10–22, 2010, producing 11 to 25 inches of rain in certain areas. These rivers also contributed to the snowpack in the Sierras, which received 75 percent of its annual snow by December 22, the first full day of winter.

NOAA research (e.g., NOAA Hydrometeorological Testbed and Cal Water) uses satellite, radar, aircraft and other observations, as well as major numerical weather model improvements, to better understand atmospheric rivers and their importance to both weather and climate.

Q&A | ELEMENT B: RISK ASSESSMENT | B2-b.

Q: For each participating jurisdiction, does the plan describe the potential impacts of each of the identified hazards on each participating jurisdiction? (Requirement §201.6(c)(2)(ii))

A: See **Impact of Urban Flooding in Rowland Water District, Issues Relating to Urban Flooding** below.

Impact of Urban Flooding in Rowland Water District

Floods and their impacts vary by location and severity of any given flood event, and likely only affect certain areas of the region during specific times. Based on the risk assessment, it is evident that urban flooding will continue to have potential economic impacts to the Rowland Water District. Impacts that are not quantified, but anticipated in future events, include:

- ✓ Injury and loss of life,
- ✓ Commercial and residential structural damage,
- ✓ Disruption of and damage to public infrastructure,
- ✓ Secondary health hazards e.g., mold and mildew,
- ✓ Damage to roads/bridges resulting in loss of mobility,
- ✓ Significant economic impact (jobs, sales, tax revenue) upon the community,
- ✓ Negative impact on commercial and residential property values, and
- ✓ Significant disruption to citizens as temporary facilities and relocations would likely be needed.

Issues Relating to Urban Flooding

- ✓ Structures in the planning area built before any regulations existed on floodplain development may be particularly vulnerable to the flood hazard.
- ✓ The accuracy of the existing flood hazard mapping produced by FEMA in reflecting the true flood risk within the planning area is questionable.
- ✓ The extent of the flood-protection currently provided by flood control facilities (dams, etc.) is not known due to the lack of an established national policy on flood protection standards.
- ✓ The risk associated with the flood hazard overlaps the risk associated with other hazards such as earthquake, landslide, and severe weather. This provides an opportunity to seek mitigation alternatives with multiple objectives that can reduce risks from multiple hazards.
- ✓ There is no area-wide degree of consistency in land-use and floodplain management practices.
- ✓ There needs to be a sustained effort to gather historical damage data, such as high-water marks on structures and damage reports, to measure the cost-effectiveness of future mitigation projects.
- ✓ Ongoing flood hazard mitigation will require funding from multiple sources.
- ✓ Coordinated hazard mitigation efforts among jurisdictions affected by flood hazards in the county are recommended.
- ✓ Residents and businesses near the floodplain (channels) should continue to be educated about flood preparedness and the resources available during and after floods.
- ✓ The concept of residual risk should be considered in the design of future capital flood control projects and should be communicated with residents living in the floodplain.
- ✓ The promotion of flood insurance as a means of protecting private property owners from the economic impacts of frequent flood events should continue.

✓	**Q&A | ELEMENT B: RISK ASSESSMENT | B2-a.**
✓	**Q:** Does the plan provide an overall summary of each jurisdiction's vulnerability to the identified hazards? (Requirement 44 CFR § 201.6(c)(2)(ii))
✓	**A:** See **Summary of Vulnerability to Flooding** below.

Summary of Vulnerability to Flooding

The following is a summary of vulnerability to urban flooding. Some of RWD's 26 occupants could be impacted by urban flooding when providing field services to impacted areas. None of the RWD-owned facilities are directly vulnerable to floodplain or urban flooding.

Historically, the majority of urban flooding has impacted properties near large intersections and freeway overpasses.

Floods have been a part of the County's historical past and will continue to be so in the future. During winter months, long periods of precipitation and the timing of that precipitation are critical in determining the threat of flood, and these characteristics further dictate the potential for widespread structural and property damage. Predominantly, the effects of flooding are generally confined to areas near the waterways of the County. As waterways grow in size from local drainages, so grows the threat of flood and dimensions of the threat.

Although the existing channels protect the service area from flooding in the floodplain, excessive rain and blocked or insufficient storm drains can result in damage to buildings and infrastructure. Structures can also be damaged from trees falling as a result of water-saturated soil. Electrical power outages happen, and the interruption of power causes major problems. Loss of power is usually a precursor to closure of schools.

Another concern associated with stormwater flooding includes impacts to infrastructure that provides a means of ingress and egress throughout the service area. Ground saturation can result in instability, collapse, or other damage to trees, structures, roadways, and other critical infrastructure. Standing water can cause damage to roads and can also damage building foundations.

Dam Failure Hazards

Hazard Definition

Dam failure results from a number of natural or human causes, including earthquakes, erosion of the face or foundation, rapidly rising flood waters, improper sitting, and structural/design flaws.

Since 1929, the State of California has been responsible for overseeing dams to safeguard life and property (California Department of Resources, 1995). This legislation was prompted by the 1928 failure of St. Francis Dam located in Los Angeles County. In 1965, the law was amended to include off-stream storage reservoirs due to the 1963 failure of Baldwin Hill Reservoir. In 1973, Senate Bill 896 was enacted to require dam owners, under the direction of Cal OES, to show the possible inundation path in the event of a dam failure.

Dam failure could require governmental assistance to continue over an extended period. These efforts could require the removal of debris and clearing of roadways, demolishing unsafe structures, assisting in reestablishing public services and utilities, and providing continuing care and welfare for the affected population including, as required, temporary housing for displaced persons.

Q&A | ELEMENT B: RISK ASSESSMENT | B1-d.

Q: Does the plan include the history of previous hazard events for each identified hazard? (Requirement 44 CFR § 201.6(c)(2)(i))

A: See **Previous Hazard Events** below.

Previous Hazard Events in Rowland Water District

There is no history of dam failure impacting the Rowland Water District.

Previous Hazard Events in Southern California

There have been a total of 45 dam failures in California, since the 19th century. The significant dam failures in Southern California are listed below in Table: Dam Failures in Southern California.

Table: Dam Failures in Southern California
(Source: http://cee.engr.ucdavis.edu/faculty/lund/dams/Dam_History_Page/Failures.htm)

Sheffield 1925	Santa Barbara	Earthquake-induced slide
Puddingstone 1926	Pomona	Overtopping during construction
Lake Hemet 1927	Palm Springs	Overtopping
St. Francis 1928	San Francisquito Canyon	Sudden failure at full capacity through foundation, 426 deaths
Cogswell 1934	Monrovia	Breaching of concrete cover
Baldwin Hills 1963	Los Angeles	Leak through embankment turned into washout, 3 deaths

Q&A | ELEMENT B: RISK ASSESSMENT | B1-a.
Q: Does the plan describe all natural hazards that can affect the jurisdiction(s) in the planning area, and does it provide the rational if omitting any natural hazards that are commonly recognized to affect the jurisdiction(s) in the planning area? (Requirement 44 CFR § 201.6(c)(2)(i)) **A:** See **Local Conditions** below.
Q&A | ELEMENT B: RISK ASSESSMENT | B1-b.
Q: Does the plan include information on the location of each identified hazard? (Requirement 44 CFR § 201.6(c)(2)(i)) **A:** See **Local Conditions** below.
Q&A | ELEMENT B: RISK ASSESSMENT | B2-a.
Q: Does the plan provide an overall summary of each jurisdiction's vulnerability to the identified hazards? (Requirement 44 CFR § 201.6(c)(2)(ii)) **A:** See **Local Conditions** below.

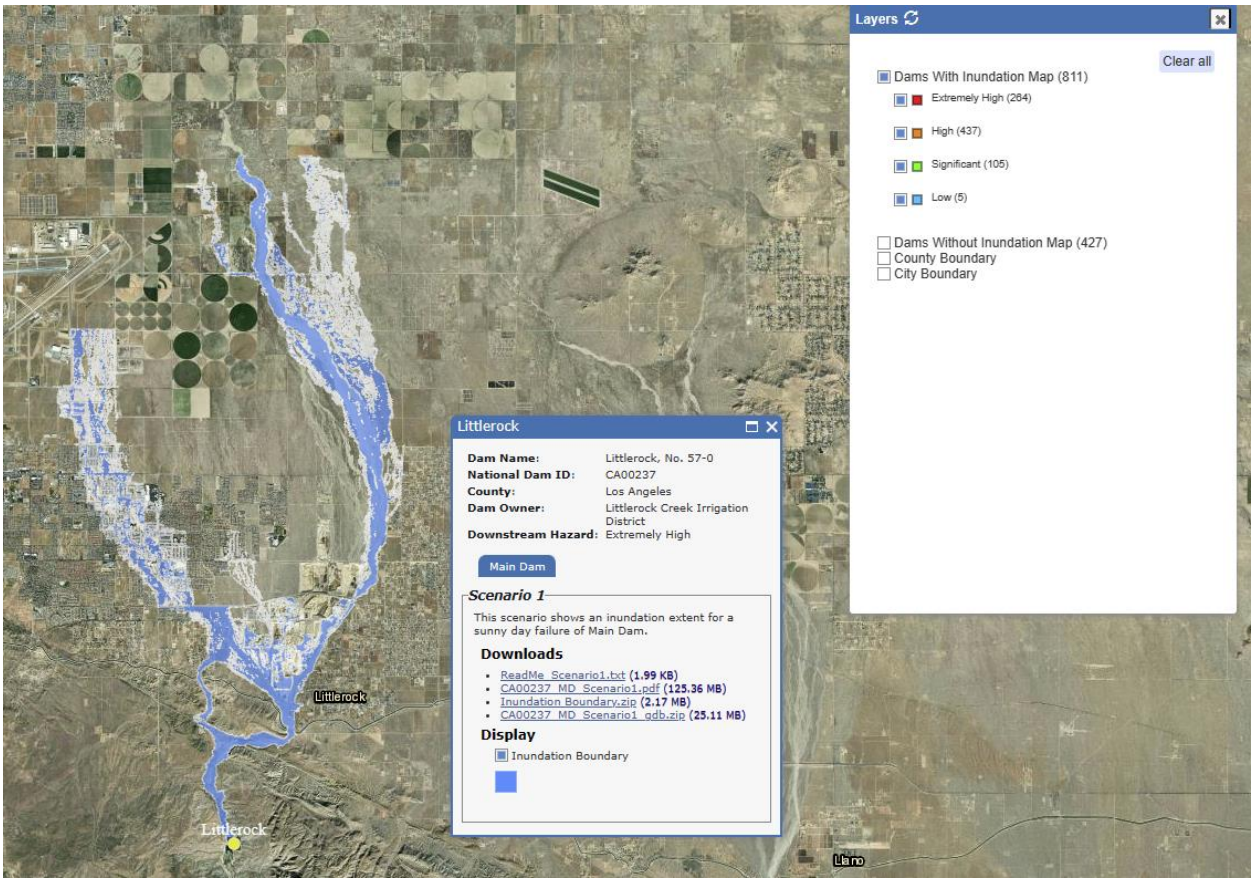
Local Conditions

According to the County of Los Angeles All-Hazards Mitigation Plan (2019), there are numerous dams posing a threat to the MJHMP project area. Although the Rowland Water District is not vulnerable to dam failure, other participating agencies are vulnerable. The specifics on the threat of dam failure in the impacted service areas are addressed in the separately attached Annexes. The following is a map showing dam locations throughout the MJHMP project area.

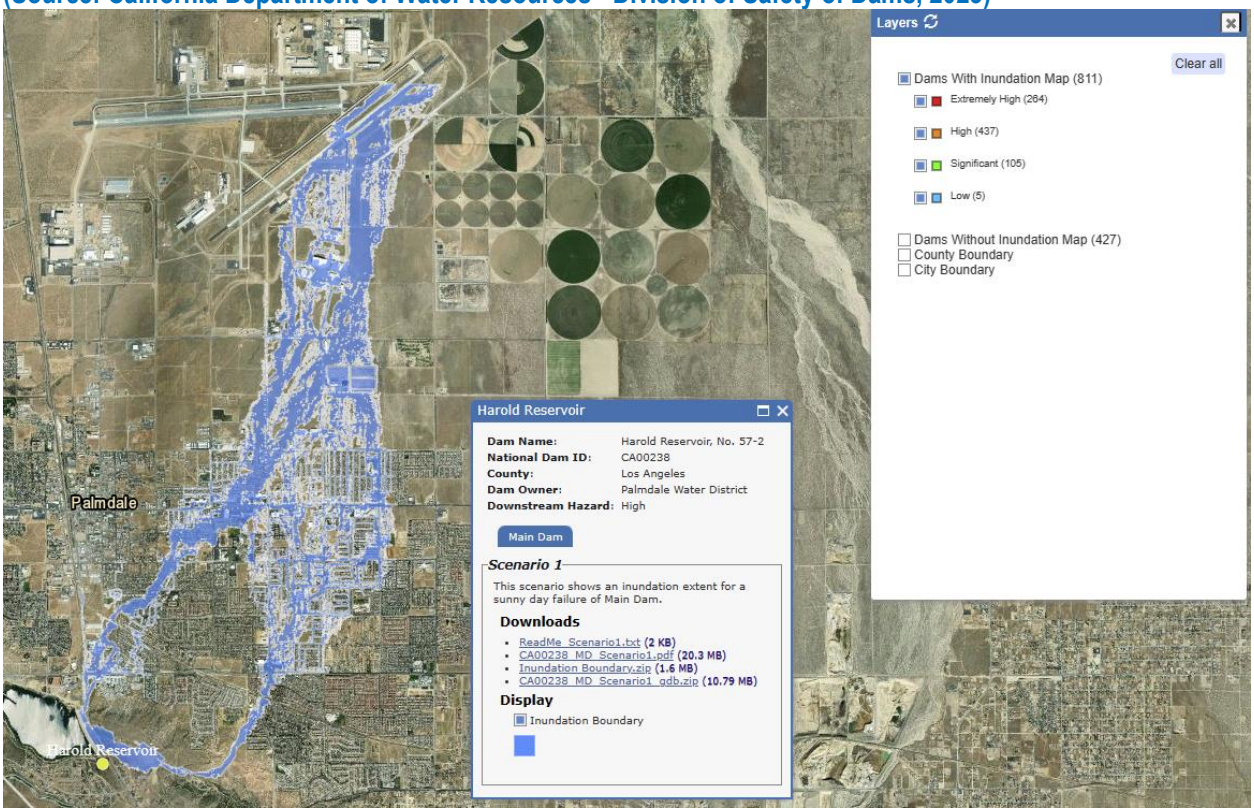
Map: Dam Failure Inundation Areas
(Source: County of Los Angeles All-Hazards Mitigation Plan, 2019)

Specific to the MJHMP project area, there are 3 dams/reservoirs that pose a threat to several of the participating agencies. Little Rock Reservoir, San Antonio Dam, and Harold Reservoir (shown below) are located in the PWAG project boundary. Quartz Hill Water District and Palmdale Water District are PWAG member agencies that could face a considerable threat from these two reservoirs.

Map: Dam Inundation Areas – Little Rock Reservoir
(Source: California Department of Water Resources - Division of Safety of Dams, 2023)



Map: Dam Failure Inundation Areas – Harold Reservoir
(Source: California Department of Water Resources - Division of Safety of Dams, 2023)

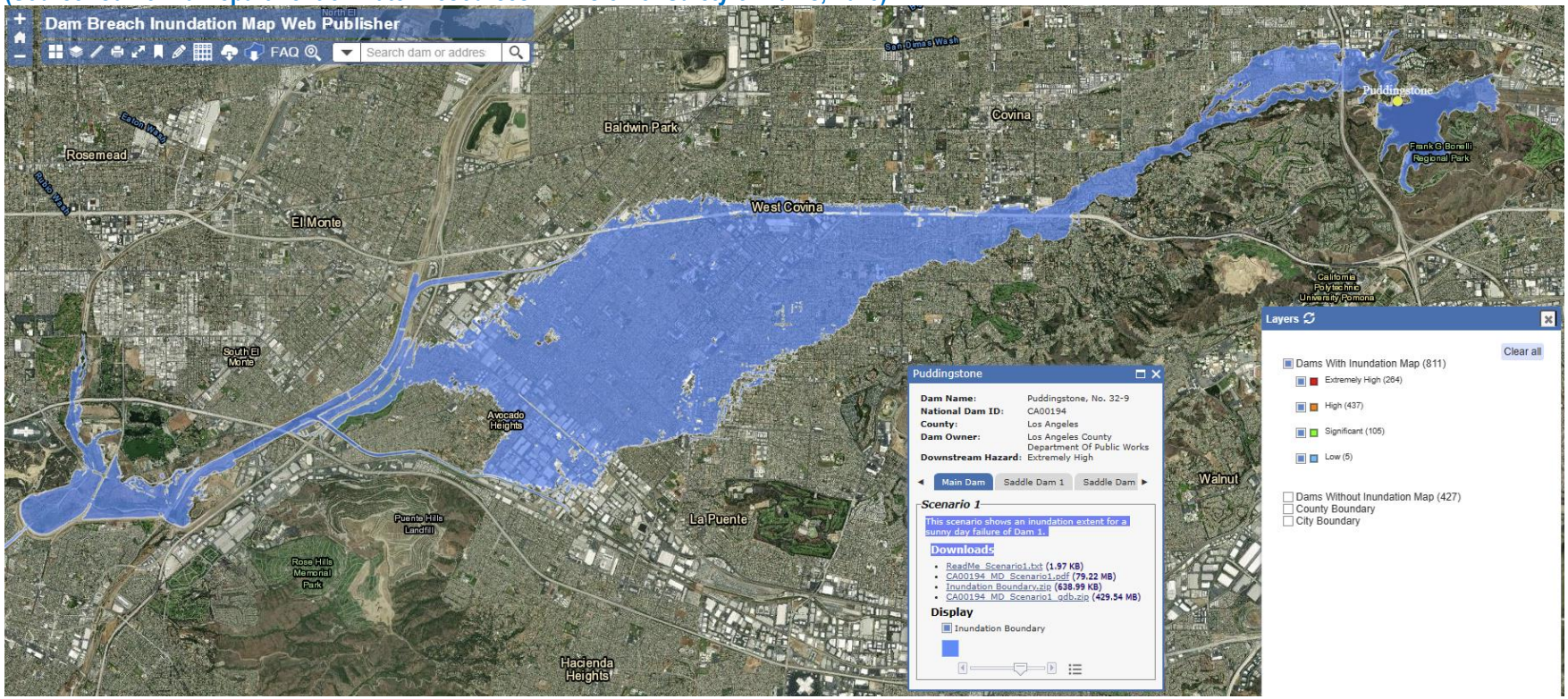


Q&A | ELEMENT B: RISK ASSESSMENT | B2-b.

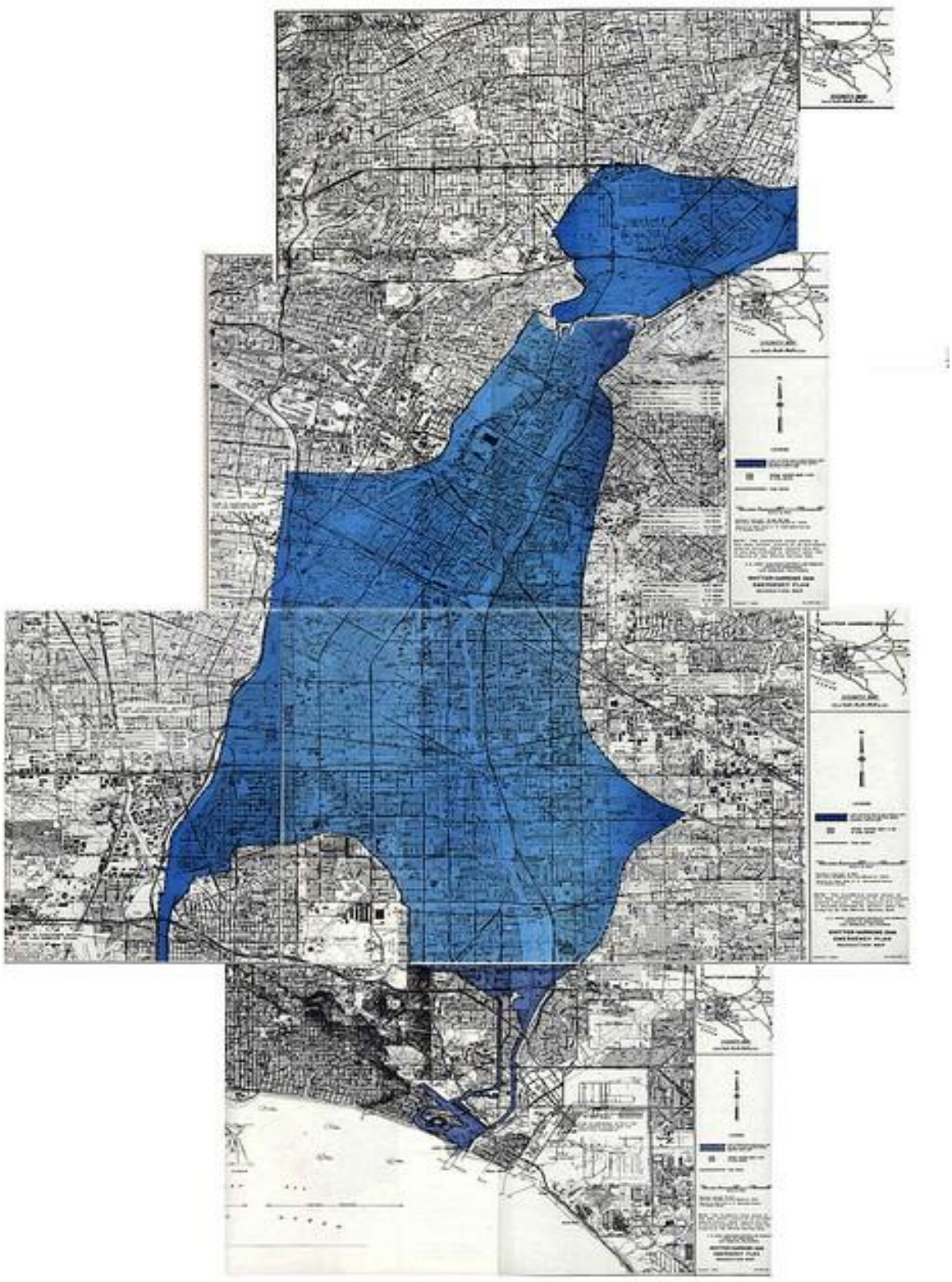
Q: For each participating jurisdiction, does the plan describe the potential impacts of each of the identified hazards on each participating jurisdiction? (Requirement 44 CFR § 201.6(c)(2)(ii))

A: See **Impact of Dam Failure, Issues Relating to Dam Failure** below.

Map: Dam Failure Inundation Area – Puddingstone Dam
(Source: California Department of Water Resources - Division of Safety of Dams, 2023)



Map: Dam Failure Inundation Area – Whittier Narrows Dam
(Source: California Department of Water Resources - Division of Safety of Dams, 2014)



Map: MyPlan – 100- Year and 500-Year Flooding - City of Pico Rivera
(Source: MyPlan.caloes.ca.gov)

Q&A | ELEMENT B: RISK ASSESSMENT | B2-b.

Q: For each participating jurisdiction, does the plan describe the potential impacts of each of the identified hazards on each participating jurisdiction? (Requirement 44 CFR § 201.6(c)(2)(ii))
A: See **Impacts from Dam Failure** below.

Impact of Dam Failure

Dam failure and their secondary impacts vary by location and severity and will likely have a significant impact on areas in and abutting the identified dam inundation area. Impacts that are not quantified, but anticipated could include:

- ✓ Injury and loss of life,
- ✓ Commercial and residential structural damage,
- ✓ Disruption of and damage to public infrastructure,
- ✓ Secondary health hazards e.g., mold and mildew,
- ✓ Damage to roads/bridges resulting in loss of mobility,
- ✓ Significant economic impact (jobs, sales, tax revenue) upon the community,
- ✓ Negative impact on commercial and residential property values, and
- ✓ Significant disruption to citizens as temporary facilities and relocations would likely be needed.

Issues Relating to Dam Failure

- ✓ The extent of the flood-protection currently provided by flood control facilities (dams, etc.) is not known due to the lack of an established national policy on flood protection standards.
- ✓ The risk associated with the flood hazard overlaps the risk associated with other hazards such as earthquake, landslide, and severe weather. This provides an opportunity to seek mitigation alternatives with multiple objectives that can reduce risks from multiple hazards.
- ✓ Ongoing dam failure hazard mitigation will require funding from multiple sources.
- ✓ Coordinated hazard mitigation efforts among jurisdictions affected by dam failure hazards in the region are recommended.
- ✓ Residents and businesses located in the dam inundation areas should be educated about notification and preparedness and the resources available during and after an event.
- ✓ The concept of residual risk should be considered in the design of future capital flood control projects and should be communicated with residents living in the potential inundation area.
- ✓ The promotion of flood insurance as a means of protecting private property owners from the economic impacts of a catastrophic event should continue.

Q&A | ELEMENT B: RISK ASSESSMENT | B2-a.

Q: Does the plan provide an overall summary of each jurisdiction's vulnerability to the identified hazards? (Requirement 44 CFR § 201.6(c)(2)(ii))

A: See **Summary of Vulnerability to Dam Failure** below.

Summary of Vulnerability to Dam Failure

The following is a summary of vulnerability to dam failures, however none of the RWD service area is vulnerable to dam failure.

Dam failure events are infrequent and usually coincide with or follow events such as earthquakes, landslides and excessive rainfall and snowmelt. Although the recent Oroville event in northern California raised public concern about dam failure, the probability of such failures remains low in today's regulatory environment. No recorded failures have occurred on dams that impact the planning area, so no estimate of frequency or probability of future occurrence can be developed based on the historical record.

All dams face a "residual risk" of failure, which represents the risk that conditions may exceed those for which the dam was designed. For example, dams may be designed to withstand a probable maximum precipitation, defined as "theoretically, the greatest depth of precipitation for a given duration that is physically possible over a given storm area at a particular geographical location at a certain time of the year" (Hansen 1982). The chance of occurrence of a precipitation event of a greater magnitude than that represents residual risk for such dams. This in turn represents a theoretical probability of future occurrence for a dam failure event, though the probability of an event exceeding the assumed maximum is not generally calculated as a part of dam design.

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

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

Wildfire Hazards

Hazard Definition

Photo: Modoc July Complex Fire
Source: Cal OES

Wildfire is an uncontrolled fire spreading through vegetative fuels and exposing or possibly consuming structures. They often begin unnoticed and spread quickly. Naturally occurring and non-native species of grasses, brush, and trees fuel wildfires. A wildland fire is a wildfire in an area in which development is essentially nonexistent, except for roads, railroads, power lines and similar facilities. A wildland/urban interface fire is a wildfire in a geographical area where structures and other human development meet or intermingle with wildland or vegetative fuels.

Photo: Modoc July Complex Fire
Source: Cal OES

Wildfire Characteristics

There are three categories of wildland/urban interface fire: The classic wildland/urban interface exists where well-defined urban and suburban development presses up against open expanses of wildland areas; the mixed wildland/urban interface is characterized by isolated homes, subdivisions, and small communities situated predominantly in wildland settings. The occluded wildland/urban interface exists where islands of wildland vegetation occur inside a largely urbanized area. 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.

Q&A | ELEMENT B: RISK ASSESSMENT | B1-d.
Q: Does the plan include the history of previous hazard events for each identified hazard? (Requirement 44 CFR § 201.6(c)(2)(i)) **A:** See **Previous Hazard Events in Rowland Water District** below

Previous Hazard Events in Rowland Water District

According to CAL FIRE, what was originally known as the Freeway Fire ignited at 9:01 a.m. PDT on November 15, 2008, along the Riverside Freeway (State Route 91, SR 91) in the riverbed of the Santa Ana River, located in Corona. The fire spread west and north into the hillsides of Yorba Linda and south into Anaheim Hills, where multiple businesses and residences were destroyed. It also burned homes in Olinda Ranch along Carbon Canyon Road in Brea, burned through much of Chino Hills, then spread north into Diamond Bar.

Next, the Landfill Fire, also known as the "Brea Fire," was reported at 10:43 a.m. PDT on November 15, 2008, and started near the 1900 block of Valencia Avenue in Brea, just south of the Olinda Landfill. It quickly spread west and eventually jumped the Orange Freeway (SR 57).

The Landfill Fire merged with the Freeway Fire at 3:30 a.m. PDT on November 16, 2008. At approximately 7:00 a.m. PDT the two fires were officially renamed the Triangle Complex Fire. Around 12:45 p.m. the Triangle Complex Fire had been renamed once again to the Freeway Complex Fire still using the OCFA incident number CA-ORC-08075221.] According to the final cause report released by the California Department of Forestry and Fire Protection (CAL FIRE) on January 4, 2010, it was confirmed that the Freeway Fire was caused by a faulty catalytic converter

The RWD service area was not directly impacted however indirect impacts were to access to roads and availability of resources.

Previous Hazard Events in Los Angeles County

The most recent significant wildfire event to impact Los Angeles County was the Tick Fire in October 2019. The fire burned 4,615 acres in the Canyon County area. The combination of warm and dry Santa Ana winds and critically dry vegetation allowed for significant fire growth. The fire destroyed 23 homes and damaged 40 other residences. During the incident, four firefighter injuries were reported.

According to the NOAA Storm Events Database, some of the counties' most destructive fires have occurred since 2018, including:

Table: Wildfires Impacting Los Angeles County 2018-2023
(Source: NOAA Storm Events Database)

County	Date	Fire	Damage
County of Los Angeles	10/24/2019	The Tick Fire	Burned 4,615 acres in the Canyon County area of Los Angeles county. The fire destroyed 23 homes and damaged 40 other residences. During the incident, four firefighter injuries were reported.
County of Los Angeles	10/10/2019	The Saddle Ridge Fire	Burned 8,799 acres across the foothills of the San Fernando Valley as well as the Santa Clarita Valley and the Los Angeles county mountains. The fire destroyed 19 residences and damaged 88 additional residences. One civilian death was reported (due to cardiac

			arrest) and eight firefighters were injured.
County of Los Angeles	11/8/2018	The Woolsey Fire	Burned a total of 96,949 acres in Los Angeles and Ventura counties including Thousand Oaks, Agoura Hills, Calabasas, the Santa Monica Mountains, Malibu, and West Hills. A total of 1,643 structures were destroyed and 3 people were killed.
County of Los Angeles	6/4/2018	The Stone Fire	Burned 1,352 acres in the mountains of Los Angeles County.

Q&A | ELEMENT B: RISK ASSESSMENT | B1-a.

Q: Does the plan describe all natural hazards that can affect the jurisdiction(s) in the planning area, and does it provide the rationale if omitting any natural hazards that are commonly recognized the jurisdiction(s) in the planning area? (Requirement 44 CFR § 201.6(c)(2)(i))
A: See **Local Conditions** below.

Q&A | ELEMENT B: RISK ASSESSMENT | B1-b.

Q: Does the plan include information on the location of each identified hazard? (Requirement 44 CFR § 201.6(c)(2)(i))
A: See **Local Conditions** below.

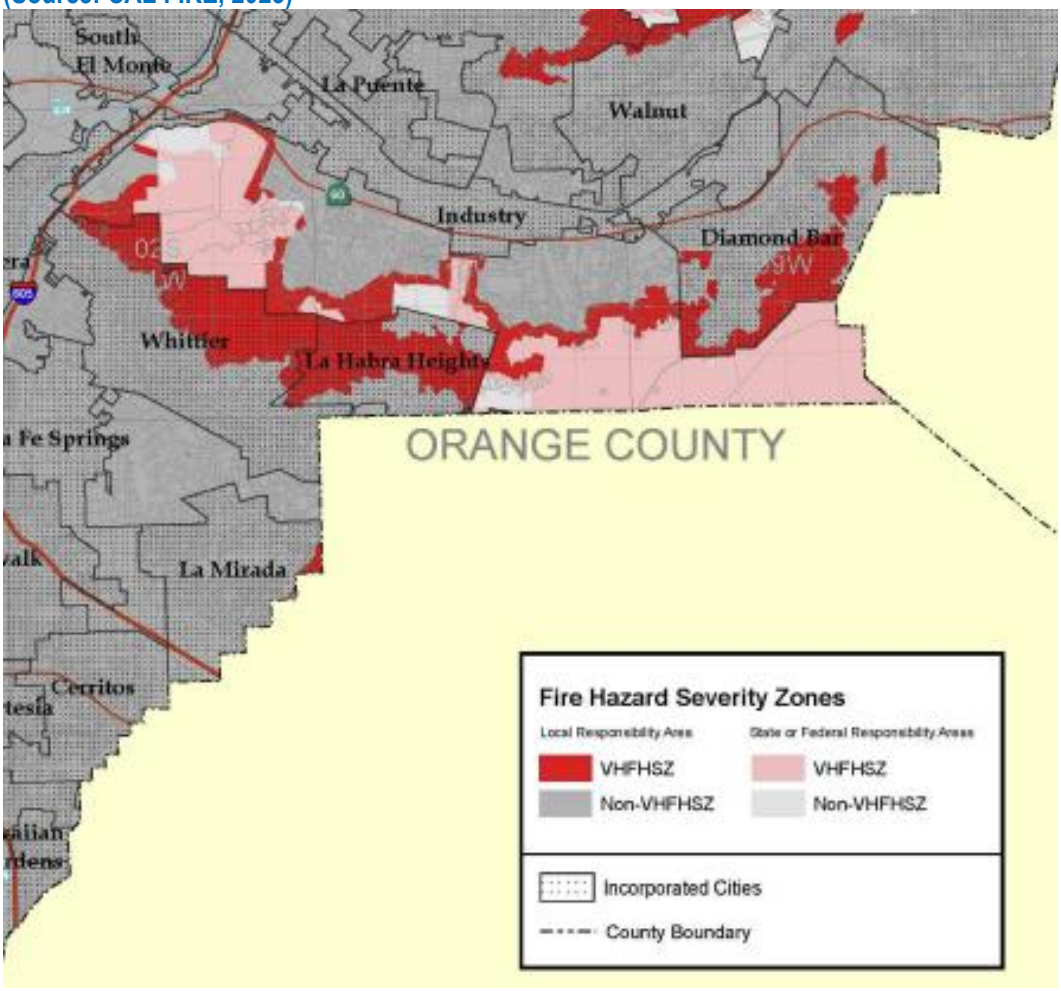
Local Conditions

Fire prevention and protection is provided by several agencies including the Los Angeles County Fire Department. Extremely low moisture in the vegetation of these hillsides poses a dangerous and volatile fire risk. The area southern portion of the service area is rated as High or Very High Wildfire Hazard Severity Zones by CAL FIRE as shown on the map below.

According to the County of Los Angeles All-Hazards Mitigation Plan (2019), the climate is characterized as Mediterranean, featuring cool, wet winters and warm, dry summers. High moisture levels during the winter rainy season significantly increase the growth of plants. However, the vegetation dries during the long, hot summers, decreasing plant moisture content, and increasing the ratio of dead fuel to living fuel. As a result, fire susceptibility increases dramatically, particularly in late summer and early autumn. In addition, the presence of chaparral, a drought-resistant variety of vegetation that is dependent on occasional wildfires, is expected in Mediterranean dry-summer climates.

A local meteorological phenomenon, known as the Santa Ana winds, contributes to the high incidence of wildfires in each 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 extremely 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.

Map: Fire Hazard Severity Zones – RWD Service Area
(Source: CAL FIRE, 2023)



Q&A | RISK ASSESSMENT | B3a.

Q: For each participating jurisdiction, does the plan describe the potential impacts of each of the identified hazards on each participating jurisdiction? (Requirement 44 CFR § 201.6(c)(2)(i))
A: See **Impacts of Wildfire** below.

Impacts of Wildfire

Wildfires and their impact vary by location and severity of any given wildfire event. Based on the risk assessment, it is evident that wildfires will continue to have potentially devastating economic impacts to the service area. Impacts that are not quantified, but anticipated in future events, include:

- ✓ 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 (e.g., jobs, sales, tax revenue) upon the community
- ✓ Negative impact on commercial and residential property values and
- ✓ Significant disruption to citizens as temporary facilities and relocations would likely be needed.

Issues Relating to Wildfire

Wildfire is an inevitable and normal ecological process in the fire-adapted landscape of Los Angeles County. Nearly 100 years of aggressive fire suppression has contributed to the high wildfire risk of today. Absent fire for many years, wildland areas became overstocked with highly flammable vegetation. At the same time, expansion of homes into rural WUI areas increased the number of homes in high-risk areas. Typically, residential property owners do not maintain forested lands, exacerbating wildfire potential. On public lands, availability of budget for large-scale wildland fuels maintenance is an ongoing issue. Overcrowded conditions degrade overall forest health and degrade the environmental values provided by forest ecosystems. While in a few areas, recent wildfires burned hot enough to damage wildland ecosystems, in general wildland ecosystems have not sustained irrevocable damage. In many cases fires were beneficial. Large, uncontrolled wildfires can cause significant damage to ecosystem services, however life, home and economic losses to residents and communities must be considered along with environmental consequences.

Research shows that home loss in wildland fires is primarily driven by two equally important factors:

1 - The vulnerabilities of buildings that make them prone to ignition are the embers that cause 80 percent of wildland fire home ignitions. The following elements are most vulnerable to embers but can be retrofitted on existing homes to reduce risk of ignition:

- ✓ Non-Class A roofs
- ✓ Roof edges and soffits
- ✓ Combustible plants and materials within 5 feet of house walls
- ✓ Non-WUI approved venting products that allow for ember entry into structures
- ✓ Wooden attachments, such as fences and decks
- ✓ Non-WUI rated windows
- ✓ Siding

2 - The vegetative fuels within 100 feet of structures (the area referred to as defensible space)—Good defensible space, wherein vegetation has been reduced to reduce fire intensity and spread, is critical to reduce ignition.

Outside of the home and the 100-foot defensible space zone, surrounding wildland fuels can play a role in home destruction, as fire and embers can spread from nearby wildland areas into communities. It is in this area that vegetation management can come into play. This refers to actions taken to alter natural vegetation or plant communities that abut communities, usually on the scale of 10's to 1,000's of acres. Vegetation management can include prescribed fire, prescribed grazing, timber harvest techniques, invasive plant removal, or mechanical treatment to remove fine fuels, dense stands of fire-prone species, shrubs, and dead and dying vegetation. Fuels are reduced in order to create "community calming zones" or restore ecosystems to fewer flammable conditions. Strategically placed calming zones can reduce near-community fire intensity and spread, provide safe anchors that firefighters can use to stop forward progress of the fire, and supplement and support near-home mitigation strategies.

Roadside fuels treatment can support emergency ingress and egress, increasing community and firefighter safety.

Although the patterns of land use, natural plant communities, topography, weather, soils, and geology vary across the landscapes of Los Angeles County, notable patterns are discernible. An approach is needed for deploying existing techniques at the scale of whole communities. Such an approach would be informed by the principles of landscape ecology. It would view the natural lands where fires tend to originate and the built infrastructure of human communities that abut the natural landscapes as a coupled system. Mitigating large-scale loss of life and property can be achieved using relatively well-established techniques of home hardening, defensible space and vegetation management at the scale of whole communities and the natural landscapes that surround them.

Q&A | RISK ASSESSMENT | B2-a.

Q: Does the plan provide an overall summary of each jurisdiction's vulnerability to the identified hazards? (Requirement 44 CFR § 201.6(c)(2)(ii))

A: See **Summary of Vulnerability to Wildfire** below.

Summary of Vulnerability to Wildfires

The following is a summary of vulnerability to wildfires. Most of RWD's 26 building occupants could be directly impacted by wildfire. In addition, all of the District-owned facilities could be impacted by wildfire including District Headquarters, Reservoirs #1, #2, #3, #4, #5, #6, #7, #8, #9, #10, #11, #12, #13, #14, #15, #16, Fullerton Booster Station, Granby Booster Station, Artigas Booster Station, Tomich Booster Station, Harbor Booster Station, Ashbourne Booster Station, 2A Booster Station, Cuatro Booster Station, Well #1, P22, Sentous, PM9, and Joint Line- JLR1 & JLR2. In total, approximately 26 building occupants, 11 buildings, and property/content valued at $62,726,361 could be at risk. These estimates are based on 2023.

The wildfire hazard is one of the highest priority hazards in Los Angeles County and is the hazard with the greatest potential for catastrophic loss. High fuel loads throughout the County, along with geographical and topographical features, create the potential for both natural and human-caused fires that can result in loss of life and property. These factors, combined with natural weather conditions common to the area, including periods of drought, high temperatures, low relative humidity, and periodic winds, can result in frequent and sometimes catastrophic fires. The more urbanized areas within the County are not immune from fire. The dry vegetation and hot and sometimes windy weather, combined with continued growth in the Wildland Urban Interface (WUI) areas, results in an increase in the number of ignitions. Any fire, once ignited, has the potential to quickly become a large, out-of-control fire. As development continues throughout the County, especially in these interface areas, the risk and vulnerability to wildfires will likely increase. Potential impacts from wildfire include loss of life and injuries; damage to structures and other improvements, natural and cultural resources, croplands, and timber; and loss of recreational opportunities. Wildfires can cause short-term and long-term disruption to the service area. Fires can have devastating effects on watersheds through loss of vegetation and soil erosion, which may impact the District by changing runoff patterns, increasing sedimentation, reducing natural and reservoir water storage capacity, and degrading water quality. Fires can also affect air quality in the area; smoke and air pollution from wildfires can be a severe health hazard.

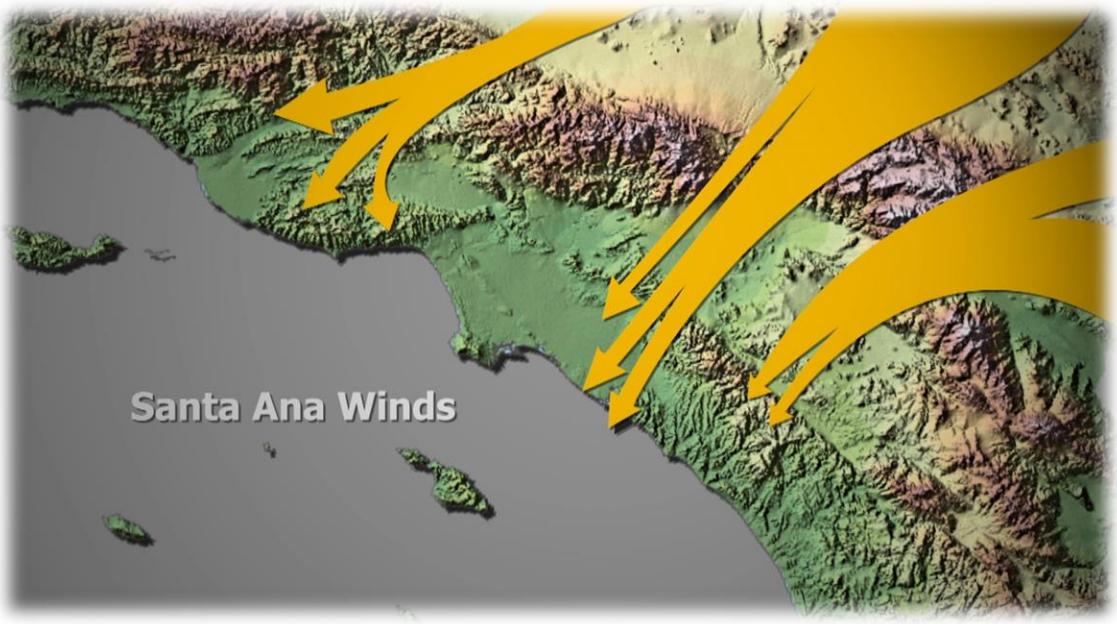
Although the physical damage and casualties arising from wildland-urban interface fires may be severe, it is important to recognize that they also cause significant economic impacts by resulting in a loss of function of buildings and infrastructure. Economic impacts of loss of transportation and utility services may include traffic delays/detours from road and bridge closures and loss of electric power, potable water, and wastewater services. Schools and businesses can be forced to close for extended periods of time. Recently, the threat of wildfire, combined with the potential for high winds, heat, and low humidity, has caused Southern California Edison to initiate Public Safety Power Shutoffs (PSPSs) which can also significantly impact a community through loss of services, business closures, and other impacts associated with loss of power for an extended period. In addition, catastrophic wildfire can create favorable conditions for other hazards such as flooding, landslides, and erosion during the rainy season.

Windstorm Hazards

Hazard Definition

Santa Ana winds are generally defined as warm, dry winds that blow from the east or northeast (offshore). 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 mountain passes with gusts to 50 or even 60 knots.

Infographic: Santa Ana Winds
Source: A screenshot from the USGS film "Living with Fire"



The complex topography of Southern California combined with various atmospheric conditions create numerous scenarios that may cause widespread or isolated Santa Ana events. Commonly, Santa Ana winds develop when a region of high pressure builds over the Great Basin (the high plateau east of the Sierra Mountains and west of the Rocky Mountains including most of Nevada and Utah). Clockwise circulation around the center of this high-pressure area forces air down slopes from the high plateau. The air warms as it descends toward the California coast at the rate of five degrees F per 1,000 feet due to compressional heating. Thus, compressional heating provides the primary source of warming. The air is dry since it originated in the desert, and it dries out even more as it is heated.

These regional winds typically occur from October to March, and, according to most accounts, are named either for the Santa Ana River Valley where they originate, or for the Santa Ana Canyon, southeast of Los Angeles, where they pick up speed.

Q&A | ELEMENT B: RISK ASSESSMENT | B1-d.

Q: Does the plan include the history of previous hazard events for each identified hazard? (Requirement 44 CFR § 201.6(c)(2)(i))

A: See **Previous Hazard Events** below.

Previous Hazard Events

Severe windstorms pose a significant risk to life and property in the RWD service area 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 the community. High winds can have destructive impact, especially on trees, power lines, and utility services.

The most recent high wind event impacting RWD occurred in January 2023 brought gusts as high as 100 mph to numerous areas in Los Angeles County.

Q&A | ELEMENT B: RISK ASSESSMENT | B1-a.

Q: Does the plan describe all natural hazards that can affect the jurisdiction(s) in the planning area, and does it provide the rationale if omitting any natural hazards that are commonly recognized the jurisdiction(s) in the planning area? (Requirement 44 CFR § 201.6(c)(2)(i))

A: See **Local Conditions** below.

Q&A | ELEMENT B: RISK ASSESSMENT | B1-b.

Q: Does the plan include information on the location of each identified hazard? (Requirement 44 CFR § 201.6(c)(2)(i))

A: See **Local Conditions** below.

Local Conditions

According to the Planning Team, RWD is at increased risk of windstorm damage – especially from power outages, falling trees and impacts to road access.

Recent drought conditions have significantly increased the vulnerability of trees due to lack of necessary water. Additionally, eucalyptus trees within the service area are specifically and currently prone to pest infestation. The infected, dying trees are increasingly vulnerable to severe Santa Ana wind conditions.

Historically, high wind conditions have caused injury, death, property damage, and fanned wildfires. Windstorms with significant intensity have been responsible for the sinking of watercraft and the downing of aircraft resulting in the loss of life. The most common wind condition is the Santa Ana Wind. Regionally, this condition has generated winds that have exceeded 100 mph. Wind velocities of up to 111 mph have been generated from the same Santa Ana wind, resulting in the loss of life due to flying debris.

Q&A | ELEMENT B: RISK ASSESSMENT | B2-b.

Q: For each participating jurisdiction, does the plan describe the potential impacts of each of the identified hazards on each participating jurisdiction? (Requirement 44 CFR § 201.6(c)(2)(ii))

A: See **Impacts of Windstorms** below.

Impacts of Windstorms

Based on the risk assessment, it is evident that windstorms continue to have the potential to result in significant economic impact to certain areas of the service area.

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
- ✓ Secondary Health hazards e.g. mold and mildew
- ✓ Damage to roads/bridges resulting in loss of mobility
- ✓ Significant economic impact (e.g., 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

Issues Relating to Windstorms

Life and Property

Windstorm events can be expected, perhaps annually, across widespread areas of the region which can be adversely impacted during a windstorm event. This can result in the involvement of emergency response personnel during 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 an area, 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 project area. 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 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.

Increased Fire Threat

Perhaps the greatest danger from windstorm activity in the project area 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.

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.

Q&A | ELEMENT B: RISK ASSESSMENT | B2-a.

Q: Does the plan provide an overall summary of each jurisdiction's vulnerability to the identified hazards? (Requirement 44 CFR § 201.6(c)(2)(ii))

A: See **Summary of Vulnerability** below.

Summary of Vulnerability to Windstorms

The following is a summary of vulnerability to windstorms. All of RWD's 26 building occupants could be impacted by hazard events involving high winds. This would include all of the District-owned properties including District Headquarters, Reservoirs #1, #2, #3, #4, #5, #6, #7, #8, #9, #10, #11, #12, #13, #14, #15, #16, Fullerton Booster Station, Granby Booster Station, Artigas Booster Station, Tomich Booster Station, Harbor Booster Station, Ashbourne Booster Station, 2A Booster Station, Cuatro Booster Station, Well #1, PM22, Sentous, PM9, and Joint Line-JLR1 & JLR2. The District-owned facilities include a total of 26 building occupants, 11 buildings, and property/contents valued at $62,726,361. These estimates are based on 2023.

The most common problems associated with severe weather events are immobility and loss of utilities. Although all populations in the planning area are exposed to severe weather events, some populations are more vulnerable. Vulnerable populations are the elderly, low income or linguistically isolated populations, people with life-threatening illnesses, and residents living in areas that are isolated from major roads. Power outages can be life-threatening to those dependent on electricity for life support. Populations living at higher elevations with large stands of trees or power lines may be more susceptible to wind damage and blackout, while populations in low-lying areas are at risk for possible flooding. In general, populations who lack adequate shelter during severe weather events, those who are reliant on sustained sources of power in order to survive, and those who live in isolated areas with limited ingress and egress options are the most vulnerable.

Specifically, damaging winds can cause injuries and fatalities in a number of ways. Downed trees may fall on homes or cars, killing or injuring those inside. Objects that are not secured can be picked up in wind events and become projectiles. Structures that collapse or blow over during damaging wind events, especially tornadoes, may kill or injure those inside.

Drought Hazards

Hazard Definition

It's impossible to separate drought from water supply shortages. Drought is defined as a deficiency of precipitation over an extended period of time, usually a season or more. This deficiency results in a water shortage for some activity, group, or environmental sector. Drought should be considered relative to some long-term average condition of balance between precipitation and evapotranspiration (i.e., evaporation + transpiration) in a particular area, a condition often perceived as "normal". It is also related to the timing (e.g., principal season of occurrence, delays in the start of the rainy season, occurrence of rains in relation to principal crop growth stages) and the effectiveness of the rains (e.g., rainfall intensity, number of rainfall events).

Other climatic factors such as high temperature, high wind, and low relative humidity are often associated with it in many regions of the world and can significantly aggravate its severity. Drought should not be viewed as merely a physical phenomenon or natural event. Its impacts on society result from the interplay between a natural event (less precipitation than expected resulting from natural climatic variability) and the demand people place on water supply. Human beings often exacerbate the impact of drought. Recent droughts in both developing and developed countries and the resulting economic and environmental impacts and personal hardships have underscored the vulnerability of all societies to this natural hazard.

One dry year does not normally constitute a drought in California but serves as a reminder of the need to plan for droughts. California's extensive system of water supply infrastructure — its reservoirs, groundwater basins, and inter-regional conveyance facilities — mitigates the effect of short-term dry periods for most water users. Defining when a drought begins is a function of drought impacts to water users. Hydrologic conditions constituting a drought for water users in one location may not constitute a drought for water users elsewhere, or for water users having a different water supply. Individual water suppliers may use criteria such as rainfall/runoff, amount of water in storage, or expected supply from a water wholesaler to define their water supply conditions.

Drought is a gradual phenomenon. Although droughts are sometimes characterized as emergencies, they differ from typical emergency events. Most natural disasters, such as floods or forest fires, occur relatively rapidly and afford little time for preparing for disaster response. Droughts occur slowly, over a multiyear period. There is no universal definition of when a drought begins or ends. Impacts of drought are typically felt first by those most reliant on annual rainfall -- ranchers engaged in dry land grazing, rural residents relying on wells in low-yield rock formations, or small water systems lacking a reliable source. Criteria used to identify statewide drought conditions do not address these localized impacts. Drought impacts increase with the length of a drought, as carry-over supplies in reservoirs are depleted and water levels in groundwater basins decline.

There are four different ways that drought can be defined:

- **Meteorological** - a measure of departure of precipitation from normal. Due to climatic differences, what is considered a drought in one location may not be a drought in another location.

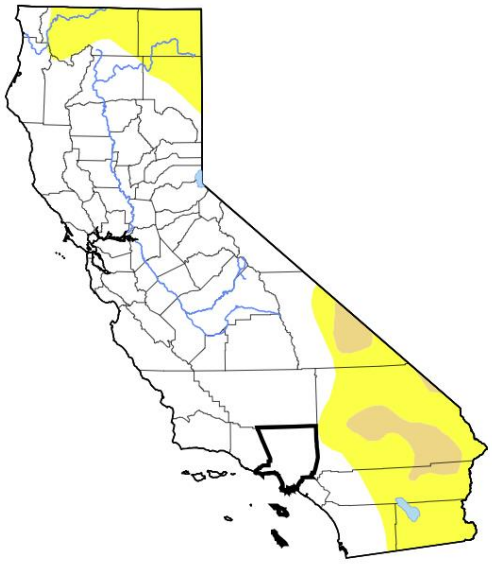
- **Agricultural** - refers to a situation when the amount of moisture in the soil no longer meets the needs of a particular crop.
- **Hydrological** - occurs when surface and subsurface water supplies are below normal.
- **Socioeconomic** - refers to the situation that occurs when physical water shortage begins to affect people.

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

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

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

U.S. Drought Monitor – Los Angeles County, California
(Source: Website – U.S. Drought Monitor 6.6.2023)



Map released: Thurs. June 1, 2023

Data valid: May 30, 2023 at 8 a.m. EDT

Intensity

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

Week	Date	None	D0-D4	D1-D4	D2-D4	D3-D4	D4	DSCI
Current	2023-05-30	100.00	0.00	0.00	0.00	0.00	0.00	0
Last Week to Current	2023-05-23	100.00	0.00	0.00	0.00	0.00	0.00	0
3 Months Ago to Current	2023-02-28	10.93	89.07	30.90	0.00	0.00	0.00	120
Start of Calendar Year to Current	2022-12-27	0.00	100.00	100.00	73.04	12.60	0.00	286
Start of Water Year to Current	2022-09-27	0.00	100.00	100.00	96.75	26.28	0.04	323
One Year Ago to Current	2022-05-31	0.00	100.00	100.00	96.75	33.86	0.04	331

Additionally, the long-term effects of climate change on regional water resources are unknown, but global water resources are already stressed without climate change. Current stresses on water resources include:

- Growing populations
- Increased competition for available water
- Poor water quality
- Environmental claims
- Uncertain reserved water rights
- Groundwater overdraft
- Aging urban water infrastructure

With a warmer climate, droughts could become more frequent, more severe, and longer lasting. The drought of the late 1980s showed what the impacts might be if climate change leads to a change in the frequency and intensity of droughts across the United States. From 1987 to 1989, losses from drought in the United States totaled $39 billion (OTA, 1993). More frequent

extreme events such as droughts and floods could end up being more cause for concern than the long-term change in temperature and precipitation averages.

Q&A | ELEMENT B: RISK ASSESSMENT | B1-d.
Q: Does the plan include the history of previous hazard events for each identified hazard? (Requirement 44 CFR § 201.6(c)(2)(i)) **A:** See **Previous Hazard Events** below.

Previous Hazard Events in Rowland Water District

Fortunately, there is no history of severe drought impacting Rowland Water District. Even so, the district has embraced state-level requirements to conserve water. The district updated its water conservation standards most recently in June of 2022, which requires Level 2 water supply shortage.

Previous Hazard Events in Los Angeles County

The region's Mediterranean climate makes it especially susceptible to variations in rainfall. Though the potential risk to the service area is in no way unique, severe water shortages could have a bearing on the economic well-being of the community. Comparison of climate (rainfall) records from Los Angeles with water well records beginning in 1930 from the San Gabriel Valley indicates the existence of wet and dry cycles on a 10-year scale as well as for much longer periods. The climate record for the Los Angeles region beginning in 1890 suggests drying conditions over the last century. With respect to the present day, climate data also suggests that the last significant wet period was the 1940s. Well level data and other sources seem to indicate the historic high groundwater levels (reflecting recharge from rainfall) occurred in the same decade. Since that time, rainfall (and groundwater level trends) appears to be in decline. This slight declining trend, however, is not believed to be significant. Climatologists compiled rainfall data from 96 stations in the State that spanned a 100-year period between 1890 and 1990. An interesting note is that during the first 50 years of the reporting period, there was only one year (1890) that had more than 35 inches of rainfall, whereas the second 50-year period recording of 5 year intervals (1941, 1958, 1978, 1982, and 1983) that exceeded 35 inches of rainfall in a single year. The year of maximum rainfall was 1890 when the average annual rainfall was 43.11 inches. The second wettest year on record occurred in 1983 when the State's average was 42.75 inches.

The driest year of the 100-year reported in the study was 1924 when the State's average rainfall was only 10.50 inches. The region with the most stations reporting the driest year in 1924 was the San Francisco Bay area. The second driest year was 1977 when the average was 11.57 inches. The most recent major drought (1987 to 1990) occurred at the end of a sequence of very wet years (1978 to 1983). The debate continues whether "global warming" is occurring, and the degree to which global climate change will have an effect on local micro-climates. The semi-arid southwest is particularly susceptible to variations in rainfall. A study that documented annual precipitation for California since 1600 from reconstructed tree ring data indicates that there was a prolonged dry spell from about 1755 to 1820 in California. Fluctuations in precipitation could contribute indirectly to a number of hazards including wildfire and the availability of water supplies.

Q&A | ELEMENT B: RISK ASSESSMENT | B1-a.
Q: Does the plan describe all natural hazards that can affect the jurisdiction(s) in the planning area, and does it provide the rationale if omitting any natural hazards that are commonly recognized the jurisdiction(s) in the planning area? (Requirement 44 CFR § 201.6(c)(2)(i)) **A:** See **Local Conditions** below.
Q&A | ELEMENT B: RISK ASSESSMENT | B1-b.
Q: Does the plan include information on the location of each identified hazard? (Requirement 44 CFR § 201.6(c)(2)(i)) **A:** See **Local Conditions** below.

Local Conditions

According to the County of Los Angeles All-Hazard Mitigation Plan (2019), the RWD service area is like the entire greater Los Angeles basin, is semi-arid, with relatively limited annual rainfall. Early settlers drew local groundwater resources for agricultural and domestic water needs. As the region grew, increasingly more wells tapped into groundwater basins. In many areas, groundwater levels have declined as water use continues to exceed natural recharge through rainfall and stream flow. Much of Southern California now relies upon imported water to greatly supplement local resources, both to meet volume demands and to ensure water quality meets state and federal drinking water standards.

The service area's location in arid Southern California underscores the importance of continued education regarding wise water use and water conservation technologies. The area remains committed to water conservation strategies that ensure a healthy, clean, and reliable supply of water remains available for residents. The District actively encourages the use of simple water conservation measures in homes and in the workplace.

Water resources are limited to the groundwater basins that provide a local source of water to the region. The San Gabriel Basin is the groundwater basin drained by the San Gabriel River and the Rio Hondo. The groundwater basin is bounded by the San Gabriel Mountains to the north, San Jose Hills to the east, Puente Hills to the south, and Raymond Fault to the west. Local groundwater accounts for a major portion of the area's water supply.

Due to past San Gabriel Valley industrial practices, the basin has been contaminated with a variety of pollutants ranging from pesticides to industrial chemicals and solvents. According to the Environmental Protection Agency (EPA), over 30 square miles of San Gabriel Valley groundwater may be contaminated. The contaminated sites underlie several San Gabriel Valley communities. The District participates in Los Angeles County's NPDES program to reduce the amount of water polluted by pesticides, engine oil, and household chemicals that run into the storm drain system and pollute groundwater. As part of this effort, the District must comply with the County's Stormwater Quality Management Program and implement Best Management Practices (BMPs) in several areas including public outreach, planning and construction, public agency activities, business inspections, and illicit connection and flow.

Q&A | ELEMENT B: RISK ASSESSMENT | B2-b.

Q: For each participating jurisdiction, does the plan describe the potential impacts of each of the identified hazards on each participating jurisdiction? (Requirement 44 CFR § 201.6(c)(2)(ii))
A: See **Impacts of Drought** below.

Impacts of Drought in Rowland Water District

Based on the risk assessment, it is evident that drought events continue to have potentially devastating economic impacts to certain areas of the District.

Impacts that are not quantified, but can be anticipated in future events, include:

- ✓ Injury and loss of life
- ✓ Disruption of and damage to public infrastructure
- ✓ Significant economic impact (jobs, sales, tax revenue) upon the community
- ✓ Negative impact on commercial and residential property values
- ✓ Uncontrolled fires and associated injuries and damage

Q&A | ELEMENT B: RISK ASSESSMENT | B2-a.

Q: Does the plan provide an overall summary of each jurisdiction's vulnerability to the identified hazards? (Requirement 44 CFR § 201.6(c)(2)(ii))
A: See **Summary of Vulnerability** below.

Summary of Vulnerability

The following is a summary of vulnerability to drought. All of RWD's 26 building occupants customers could be impacted by hazard events involving drought. This would include all of the District-owned properties including District Headquarters, Reservoirs #1, #2, #3, #4, #5, #6, #7, #8, #9, #10, #11, #12, #13, #14, #15, #16, Fullerton Booster Station, Granby Booster Station, Artigas Booster Station, Tomich Booster Station, Harbor Booster Station, Ashbourne Booster Station, 2A Booster Station, Cuatro Booster Station, Well #1, PM22, Sentous, PM9, and Joint Line- JLR1 & JLR2. The District-owned facilities include a total of 26 building occupants, 11 buildings, and property/contents valued at $62,726,361. These estimates are based on 2023.

Drought is a slow moving hazard. Severe reductions and shutoffs can take place following a broken water main or during major repairs. It is possible that water agencies could resort to restrictions rather than just fines.

Utility Related Hazards

Hazard Definition

Utility providers provide communities with vital services. Because of training and rigorous safety programs, delivery of services is typically very reliable and without incident. However, in certain hazardous circumstances, like an earthquake or high wind, utility providers are impacted just like their customers. In an effort to minimize this vulnerability, power utility providers have developed protocols like Public Safety Power Shutoff while water and gas utility providers encourage the use of emergency shutoff devices. Source supply issues can also arise and are discussed in the section.

Q&A | ELEMENT B: HAZARD IDENTIFICATION AND RISK ASSESSMENT | B2a.
Q: Does the plan include information on **previous occurrences** of hazard events for each jurisdiction? (Requirement §201.6(c)(2)(i))
A: See **Previous Occurrences of Utility Related Hazards** below.

Previous Occurrences of Utility Related Hazards

Power Failure/Stoppages

Southern California Edison (SCE) provides utility service to the MJHMP Project Area. There have been brief power failures and deliberate outages (Public Safety Power Shutoff). According to the 2023 State Hazard Mitigation Plan, California's 33 reported PSPS events between 2013 and 2019 represent an average of almost five events per year. The State is expected to continue to experience multiple PSPS events each year. Specific PSPS events in Los Angeles County was not available, however, it is reasonable to assume that if severe weather threatens a portion of the electric system, it may be necessary for SCE to turn off electricity in the interest of public safety.

Droughts and Loss of Water Supply

Droughts are covered in a separate Hazard-Specific Chapter.

Natural Gas Pipelines

There have been no pipeline incidents that have posed a significant threat to the MJHMP Project Area.

Q&A | ELEMENT B: HAZARD IDENTIFICATION AND RISK ASSESSMENT | B1a.
Q: Does the plan include a general **description** of all natural hazards that can affect each jurisdiction? (Requirement §201.6(c)(2)(i)) **A:** See **Local Conditions** below.
Q&A | ELEMENT B: HAZARD IDENTIFICATION AND RISK ASSESSMENT | B3b.
Q: Is there a description of each identified hazard's overall **vulnerability** (structures, systems, populations, or other community assets defined by the community that are identified as being susceptible to damage and loss from hazard events) for each jurisdiction? (Requirement §201.6(c)(2)(ii)) **A:** See **Local Conditions** below.

Local Conditions

Power Failure and Stoppages

Power failure is defined as any interruption or loss of electrical service caused by disruption of power transmission caused by accident, sabotage, natural hazards, or equipment failure (also referred to as a loss of power or power outage). A significant power failure is defined as any incident of a long duration, which would require the involvement of the local and/or State emergency management organizations to coordinate provision of food, water, heating, cooling, and shelter. Power failures in the planning area are usually localized and are usually the result of a natural hazard event involving high winds or storms. Electricity throughout the project area is provided by Southern California Edison (SCE).

The massive 2011 Southern California electricity outage brought to light many critical issues surrounding the state's power generation and distribution system, including its dependency on out-of-state resources. Although California has implemented effective energy conservation programs, the state continues to experience both population growth and weather cycles that contribute to a heavy demand for power.

Hydro-generation provides approximately 25% of California's electric power, with the balance coming from fossil fuels, nuclear, and green sources. As experienced in 2000 and 2001, blackouts can occur due to losses in transmission or generation and/or extremely severe temperatures that lead to heavy electric power consumption.

The effects of an energy shortage would affect all occupants of the project area. Perhaps most at risk would be medically challenged individuals with health care equipment reliant on electricity (e.g., oxygen), businesses, emergency service locations, and vulnerable population centers (e.g., schools).

In 2018, the California Public Utilities Commission (CPUC) directed California's three largest energy companies to coordinate to prepare all Californians for the threat of wildfires and power outages during times of extreme weather. To help protect customers and communities during extreme weather events, electric power may now be shut off for reasons of public safety. This new protocol is referred to as Public Safety Power Shutoff (PSPS).

Loss of Water Supply

In addition to water collected through rainfall, the District primarily obtains its water supplies from purchasing treated imported water. The District's water supply sources share the same base years. As discussed in the RWD Urban Water Management Plan, a single dry year or a

five consecutive year drought period will not compromise the District's ability to provide a reliable supply of water to its customers. The UWMP also contains a Drought Risk Assessment which includes an assessment of the District's water supply reliability over a five year consecutive drought period. The DRA assumes a five year consecutive drought from FY 2020-21 through FY 2024-25 and includes a review of water supplies, water uses, and water supply reliability for each water supply source during this period. The District's water system has experienced a prior five consecutive year drought with no limitation to its collective water supplies. However, the cost of those water supplies may have increased based on the mix of water supplies which are used. Consequently, the District has the ability to enact varying water shortage levels to help educate its customers and provide an economic incentive for the retail customers to reduce their water consumption.

Natural Gas Pipelines

There are several major natural gas pipelines that traverse the planning area as shown on **Map: California Natural Gas Utility Service Area**. While pipelines are often thought of as presenting risks to communities, natural hazards can impact the integrity of pipelines. According to the U.S. Department of Transportation, although natural hazards are cited as the cause in fewer than ten percent (10%) of pipeline incidents, the failure of a large-diameter, high-pressure natural gas or hazardous liquid transmission pipeline during an earthquake can significantly complicate a communities' ability to respond and recover from the event. Natural gas is supplied to the planning area by Southern California Gas Company (SoCalGas).

In Northern California on September 9, 2010, a 30-inch steel natural gas transmission pipeline owned and operated by PG&E ruptured and exploded in the City of San Bruno residential neighborhood. The blast and ensuing inferno resulted in 8 confirmed deaths, 66 reported injuries, 34 destroyed structures, and 8 damaged structures. Cal OES has identified preliminary damage estimates at $15.4 million, including $2.5 million for debris removal, $10.2 million for protective measures, $2.1 million for roads and bridges, and $0.6 million for utilities and other facilities. Investigations into the cause of the explosion are under way by the National Safety Transportation Board (NSTB), the California Public Utilities Commission (CPUC), and PG&E. Although it will not be confirmed until official investigations are completed, initial speculation points to the weakening of the 60-year-old pipeline due to corrosion. The day after the explosion, the CPUC asked PG&E to provide a list of its top 100 high-priority projects to upgrade or replace portions of the pipeline for reasons of public safety, as well as information on the status of listed projects. The list was published on September 21, 2010. Although targeted for repair several years ago, the San Bruno pipeline was not on the list.

Virtually all natural gas, which accounts for about 28 percent of energy consumed annually, is transported by transmission pipelines. Although California is a leader in exploring and implementing alternative energy sources such as wind and solar, the expansion of traditional energy sources, such as natural gas, continues. There are natural gas transmission pipelines within the Project Area, as well as adjoining communities.

Map: California Natural Gas Utility Service Area
(Source: California Energy Commission, Date: 2020)

Q&A | ELEMENT B: HAZARD IDENTIFICATION AND RISK ASSESSMENT | B3a.
Q: Is there a description of each hazard's **impacts** on each jurisdiction (what happens to structures, infrastructure, people, environment, etc.)? (Requirement §201.6(c)(2)(ii)) **A:** See **Impacts of Utility Related Hazards** below.

Impacts of Utility Related Hazards

Based on the risk assessment, it is evident that utility related hazards will continue to have potentially devastating impacts on the service area.

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,
- ✓ Significant economic impact,
- ✓ Negative impact on commercial and residential property values, and
- ✓ Significant disruption to students and teachers as temporary facilities and relocations would likely be needed.

Issues Relating to Utility Related Hazards

Important issues associated with utility related events include the following:

- ✓ A large percentage of the service area could be impacted all at the same time which would significantly impact emergency services capabilities.
- ✓ In the event of a power outage, it may be necessary for the utility provider to assist certain properties with reactivation.
- ✓ In the event of an outage of natural gas or propane, the utility provider may be required to assist customers with reactivation.
- ✓ Transportation systems in the planning area after an outage has the potential to significantly disrupt response and recovery efforts and lead to isolation of populations.
- ✓ Results loss of heating and air conditioning systems can impact comfort and safety levels for building occupants.
- ✓ Infrastructure-related computer systems are vulnerable to power outages.
- ✓ Schools and other educational facilities would be expected to be self-sufficient during outages and may be compromised as to decreased services from government response agencies, utilities, private-sector services, and infrastructure components.
- ✓ Lack of refrigeration would impact storage of onsite medicines, food, and other supplies.
- ✓ The flow of goods and services could result due to impacts to major transportation infrastructure across the broader region.
- ✓ A power outage can compromise or damage communication systems, complicating efforts to coordinate response to the event.

Q&A | ELEMENT B: RISK ASSESSMENT | B2-a.

Q: Does the plan provide an overall summary of each jurisdiction's vulnerability to the identified hazards? (Requirement 44 CFR § 201.6(c)(2)(ii))
A: See **Summary of Vulnerability** below.

Summary of Vulnerability to Utility Related

The following is a summary of vulnerability to utility related events. All of RWD's 26 building occupants could be impacted by utility related events including RWD-owned facilities: District Headquarters, Reservoirs #1, #2, #3, #4, #5, #6, #7, #8, #9, #10, #11, #12, #13, #14, #15, #16, Fullerton Booster Station, Granby Booster Station, Artigas Booster Station, Tomich Booster Station, Harbor Booster Station, Ashbourne Booster Station, 2A Booster Station, Cuatro Booster Station, Well #1, PM22, Sentous, PM9, and Joint Line- JLR1 & JLR2. The approximate total could include 26 building occupants, 11 buildings, and property/contents valued at $62,726,361. These estimates are based on 2023.

Public Safety Power Shutoff (PSPS) can be initiated by SCE for a range of reasons including wildfire, high wind, severe weather, flooding, and earthquake. The power shutoffs are initiated in large areas within the county so property may not even be impacted by the initial event but still impacted by the power shutoff.

PART III: MITIGATION STRATEGIES

Mitigation Strategies

Overview of Mitigation Strategy

As the cost of damage from disasters continues to increase nationwide, the Rowland Water District and other participating agencies in the MJHMP recognize the importance of identifying effective ways to reduce vulnerability to disasters. Mitigation Plans assist communities in reducing risk from natural hazards by identifying resources, information and strategies for risk reduction, while helping to guide and coordinate mitigation activities at the project area facilities.

The plan provides a set of action items to reduce risk from hazards through education and outreach programs, and to foster the development of partnerships. Further, the plan provides for the implementation of preventative activities.

The resources and information within the Multi-Jurisdictional Hazard Mitigation Plan:

1. Establish a basis for coordination and collaboration among agencies and the public in the Rowland Water District and other MJHMP participating agencies.
2. Identify and prioritize future mitigation projects.
3. Assist in meeting the requirements of federal assistance programs.

The Mitigation Plan is integrated with other District plans including the Urban Water Management Plan, Strategic Plan, and Emergency Response Plan.

Mitigation Measure Categories

Following is FEMA's list of mitigation categories. The activities identified by the Planning Team are consistent with the six broad categories of mitigation actions outlined in FEMA publication 386-3 *Developing the Mitigation Plan: Identifying Mitigation Actions and Implementing Strategies*.

- ✓ **Prevention:** Government administrative or regulatory actions or processes that influence the way land and buildings are developed and built. These actions also include public activities to reduce hazard losses. Examples include planning and zoning, building codes, capital improvement projects, open space preservation, and storm water management regulations.
- ✓ **Property Protection:** Actions that involve modification of existing buildings or structures to protect them from a hazard, or removal from the hazard area. Examples include acquisition, elevation, relocation, structural retrofits, storm shutters, and shatter-resistant glass.
- ✓ **Public Education and Awareness:** Actions to inform and educate citizens, property owners, and elected officials about hazards and potential ways to mitigate them.

  Such actions include outreach projects, real estate disclosure, hazard information centers, and school-age and adult education programs.

- ✓ **Natural Resource Protection:** Actions that, in addition to minimizing hazard losses, preserve or restore the functions of natural systems. Examples include sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.
- ✓ **Emergency Services:** Actions that protect people and property during and immediately following a disaster or hazard event. Services include warning systems, emergency response services, and protection of critical facilities.
- ✓ **Structural Projects:** Actions that involve the construction of structures to reduce the impact of a hazard. Such structures include dams, levees, floodwalls, retaining walls, and safe rooms.

Q&A | ELEMENT C. MITIGATION STRATEGY | C3-a.
Q: Does the plan include goals to reduce the risk from the hazards identified in the plan? (Requirement 44 CFR § 201.6(c)(3)(i)) **A:** See **Goals** below.
Q&A | ELEMENT C. MITIGATION STRATEGY | C5-a.
Q: Does the plan describe the criteria used for prioritizing actions? (Requirement 44 CFR § 201.6(c)(3)(iv)) **A:** See **Priorities** below.
Q&A | ELEMENT E. PLAN UPDATE | E2-a.
Q: Does the plan describe how it was revised due to changes in community priorities? (Requirement 44 CFR § 201.6(d)(3)) **A:** See **Goals** below.

Ensuring Goals Benefit the Whole Community

The following content was gathered from FEMA's 2023 Local Hazard Mitigation Policy Guidance.

Individuals and groups within your community have differing needs, preferences and strengths. When your most underserved and socially vulnerable residents can participate in and benefit from your plan and your projects, the rest of your community will too. Pick a planning approach in which you set large-scale goals for the entire community, but then use targeted approaches to meet those goals for even the most underserved and socially vulnerable populations.

For example, you could set a goal of making sure that all residents, workers and visitors have the ability to access safe, cool spaces during a heat wave. While the wealthiest residents most likely have access to private homes with air conditioning, lower-income residents may lack such resources. Also, anyone can be affected by storms or other disruptions to cooling systems.

To resolve this disparity and achieve the overarching goal of community resilience to high heat events, your community may decide to create public cooling centers. However, this may not meet the need. These spaces also need to be accessible to those who need them. Consider accessibility to people with disabilities, public transit availability and proximity. Also consider ways to provide travel vouchers, availability of wi-fi and charging stations (including power cords), access to potable water and facilities, and staff cultural or language competencies. It is also important to think about the potential consequences of your plan as it may have unintended impacts on socially vulnerable populations. For instance, while many mitigation measures increase property values and improve neighborhood livability, these effects can contribute to

gentrification. Gentrification often displaces low-income residents and disrupts the social fabric of a community. This could decrease the overall resilience of already-at-risk groups. By thinking through potential impacts like these, you can proactively work to address them.

Goals

The Planning Team identified the overall goals to guide the direction of future activities aimed at reducing risk and preventing loss from natural hazards.

The Planning Team established goals based on the risk assessment that represent a long-term vision for hazard reduction and enhanced mitigation capabilities.

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 and descriptions are listed below.

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.

Reduce losses and repetitive damages for chronic hazard events while promoting insurance coverage for catastrophic 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.

Public Awareness

Develop and implement education and outreach programs to increase public awareness of the risks associated with natural hazards.

Provide information on tools, partnership opportunities, and funding resources to assist in implementing mitigation activities.

Natural Systems

Balance watershed planning, natural resource management, and land use planning with natural hazard mitigation to protect life, property, and the environment.

Preserve, rehabilitate, and enhance natural systems to serve natural hazard mitigation functions.

Partnerships and Implementation

Strengthen communication and coordinate participation among and within public agencies, citizens, non-profit organizations, business, and industry to gain a vested interest in implementation.

Encourage leadership within public and private sector organizations to prioritize and implement local, county, and regional hazard mitigation activities.

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 natural hazard mitigation activities, where appropriate, with emergency operations plans and procedures.

How are the Mitigation Action Items Organized?

The action items are organized within the following Mitigation Actions Matrix, categorized by hazard. Data collection and research and the public participation process resulted in the development of these action items. The Matrix includes the following information for each action item:

Action Item

The action item is a brief description of the project, service, or change that will result in hazard mitigation. The action items are a listing of activities identified by RWD departments who will lead with the assistance of outside agencies and customers.

FEMA requires at least one mitigation action item for each of the hazards ranked as Medium or High in the CPRI Hazard Priority Rankings (see CPRI in the Risk Assessment Section).

Lead Department/Position

The Mitigation Actions Matrix assigns primary responsibility for each of the action items. The hierarchies of the assignments vary – some are departments while others are positions. The primary responsibility for implementing the action items falls to the entity shown as the “Lead Department/Position”. The identified entity has the responsibility to address hazards, or that is willing and able to organize resources, find appropriate funding, or oversee activity implementation, monitoring, and evaluation. Supporting agencies may also be listed which would include outside agencies that are capable of or responsible for assisting in implementing activities and programs.

Timeline

The mitigation plan will be updated every 5 years according to FEMA regulations. However, there are projects and programs in the Mitigation Actions Matrix that will require more than 5 years to complete.

Funding Source

External Resources could include a range of FEMA mitigation grants perhaps including Hazard Mitigation Grant Program (HMGP), Flood Mitigation Assistance Grant Program (FMA), and Building Resilient Infrastructure and Communities (BRIC).

Internal Resources could include the annual/general fund, capital improvement projects, impact/development fees, human capital, in-kind resources, etc.

Plan Goals Addressed

The plan goals addressed by each action item are included as a way 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

Q&A | ELEMENT D: PLAN MAINTENANCE | D3-b.

Q: Does the plan identify the planning mechanisms for each plan participant into which the ideas, information and strategy from the mitigation plan may be integrated? (Requirement 44 CFR § 201.6(c)(4)(ii))

A: See **Planning Mechanism** below.

Planning Mechanism

It's important that each action item be implemented. Perhaps the best way to ensure implementation is through integration with one or many of the District's existing "planning mechanisms" including policy guidelines and internal/external funding resources. Policy guidelines might include the Urban Water Management Plan and the Strategic Plan. The internal funding resources could include Capital Improvement Projects, and Annual/General Fund while external funding resources could include grants and donations. Opportunities for integration will be simple and easy in cases where the action item is already compatible with the content of the planning mechanism. As an example, if the action item calls for the creation of a water conservation ordinance and the same action is already identified in the Strategic Plan's policies, then the Strategic Plan will assist in implementation. On the contrary, if preparation of a water conservation ordinance is not already included in the Strategic Plan policies, then the item will need to be added during the next update to the Strategic Plan.

The Capital Improvement Program, depending on the budgetary environment, is updated every 5 years. The CIP includes infrastructure projects built and owned by the District. As such, the CIP is an excellent medium for funding and implementing action items from the Mitigation Plan. The Mitigation Actions Matrix includes several items from the existing CIP. The authors of the CIP served on the Planning Team and are already looking to funding addition Mitigation Plan action items in future CIPs.

The Annual or General Fund is the budget document that guides all of the District's expenditures and is updated on an annual basis. Although primarily a funding mechanism, it also includes descriptions and details associated with tasks and projects.

Grants come from a wide variety of sources – some annually and others triggered by events like disasters. Whatever the source, the District uses the Annual/General Fund to identify successful grants as funding sources.

Building and Infrastructure

This addresses the issue of whether or not a particular action item results in the reduction of the effects of hazards on new and existing buildings and infrastructure.

Comments

The purpose of the "Comments" is to capture the notes and status of the various action items. Since Planning Team members frequently change between plan updates and annual reviews, the Comments provide a history to help in tracking the progress and status of each action.

Q&A | ELEMENT C. MITIGATION STRATEGY | C5-a.

Q: Does the plan describe the criteria used for prioritizing actions? (Requirement 44 CFR § 201.6(c)(3)(iv))

A: See **Benefit/Cost Ratings** below.

Benefit/Cost Ratings

The benefits of proposed projects were weighed against estimated costs as part of the project prioritization process. The benefit/cost analysis is not of the detailed variety required by FEMA for project grant eligibility under the Hazard Mitigation Grant Program (HMGP) and Building Resilient Infrastructure and Communities (BRIC) grant program. A less formal approach was used because some projects may not be implemented for up to 10 years, and associated costs and benefits could change dramatically in that time. Therefore, a review of the apparent benefits versus the apparent cost of each project will be performed in the future as needed. Parameters were established for assigning subjective ratings (high, medium, and low) to the costs and benefits of these projects.

Cost ratings were defined as follows:

> **High:** Existing funding within the jurisdiction will not cover the cost of the action item so outside sources of revenue would be required.
>
> **Medium:** The action item could be funded through existing jurisdictional funding but would require budget modifications.
>
> **Low**: The action item could be funded under existing jurisdictional funding within the assigned lead department.

Benefit ratings were defined as follows:

> **High**: The action item will provide short-term and long-term impacts on the reduction of risk exposure to life and property.

Medium: The action item will have long-term impacts on the reduction of risk exposure to life and property.

Low: The action item will have only short-term impacts on the reduction of risk exposure to life and property.

Q&A | ELEMENT C. MITIGATION STRATEGY | C5-a.
Q: Does the plan describe the criteria used for prioritizing actions? (Requirement 44 CFR § 201.6(c)(3)(iv)) **A:** See **Priority Rating** below.

Priority Rating

The Planning Team utilized the following rating tool to establish priorities. Designations of "High", "Medium", and "Low" priority have been assigned to all of the 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 Urban Water Management Plan or Capital Improvement Project?

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?

As mitigation action items were updated or written the Planning Team, representatives were provided worksheets for each of their assigned action items. Answers to the criteria above determined the priority according to the following scale.

- 1-6 = Low priority
- 7-12 = Medium priority
- 13-18 = High priority

Q&A | ELEMENT C: MITIGATION STRATEGY | C4-a.
Q: Does the plan include an analysis of a comprehensive range of actions/projects that each jurisdiction considered to reduce the impacts of hazards identified in the risk assessment? (Requirement 44 CFR § 201.6(c)(3)(ii)) **A:** See **Mitigation Actions Matrix (Action Items)** below.
Q&A | ELEMENT C: MITIGATION STRATEGY | C4-b.
Q: Does the plan include one or more action(s) per jurisdiction for each of the hazards as identified within the plan's risk assessment? (Requirement 44 CFR § 201.6(c)(3)(ii)) **A:** See **Mitigation Actions Matrix (Action Items)** below.
Q&A | ELEMENT C: MITIGATION STRATEGY | C5-a.
Q: Does the plan describe the criteria used for prioritizing actions? (Requirement 44 CFR § 201.6(c)(3)(ii)) **A:** See **Mitigation Actions Matrix (Priority, Goals)** below.
Q&A | ELEMENT C: MITIGATION STRATEGY | C5-b.
Q: Does the plan identify the position, office, department, or agency responsible for implementing/administering the identified mitigation actions, as well as potential funding sources and expected time frame? (Requirement 44 CFR § 201.6(c)(3)(iii))) **A:** See **Mitigation Actions Matrix (Lead Department/Position, Timeline, Funding Source)** below.
Q&A | ELEMENT D: PLAN MAINTENANCE | D3-a.
Q: Does the plan describe the process the community will follow to integrate the ideas, information and strategy of the mitigation plan into other planning mechanisms? (Requirement 44 CFR § 201.6(c)(4)(ii)) **A:** See **Mitigation Actions Matrix (Planning Mechanism)** below.
Q&A | ELEMENT E: PLAN UPDATE | E2-b.
Q: Does the plan include a status update for all mitigation actions identified in the previous mitigation plan? (Requirement 44 CFR § 201.6(d)(3)) **A:** See **Mitigation Actions Matrix (Comments)** below.
Q&A | ELEMENT E: PLAN UPDATE | E2-c.
Q: Does the plan describe how jurisdictions integrated the mitigation plan, when appropriate, into other planning mechanisms? (Requirement 44 CFR § 201.6(d)(3)) **A:** See **Integration into other Planning Mechanisms (Comments)** below.

Mitigation Actions Matrix

Following is **Table: Mitigation Actions Matrix** which identifies the existing and future mitigation activities developed by the Planning Team.

Action Item	**Lead Department/Position**	**Timeline**	**Goal:** Protect Life and Property	**Goal:** Enhance Public Awareness	**Goal:** Protect Natural Environment	**Goal:** Protect Emergency Services	**Goal:** Encourage Partnerships	**Benefit** (L - Low, M - Medium, H - High)	**Cost** (L - Low, M - Medium, H - High)	**Priority** (L - Low, M - Medium, H - High)	**Funding Source:** GF-General Fund, CIP-Capital Improvement Project, HMGP-Hazard Mitigation Grant Program, BRIC-Building Resilient Infrastructure and Communities	**Planning Mechanism:** GF, CIP, HMGP, BRIC, SP - Strategic Plan, UWMP – Urban Water Management Plan	**Buildings & Infrastructure:** Does the Action item involve New and/or Existing Buildings and/or Infrastructure? Yes (Y)	**Comments 2023**
Multi-Hazard Action Items														
MH-1 Upgrade and replace server hardware and software to effectively accommodate new business applications, transfer increased amounts of data quickly and increase security and reliably.	General Manager	2-5 years	X			X	X	H	M	L	CIP	CIP	Y	$160,000
MH-2 Computer Software (based off IT vendor recommendations)	General Manager	1-2 years	X			X		H	L	H	CIP	CIP		$15,000
MH-3 Security Fencing - Replace existing fence and increase height of fence at Tomich Booster Station to improve security	Project Manager	Complete	X			X		H	M	M	CIP	CIP	Y	Completed; $200,000
MH-4 Security Fencing -	Project Manager	1-2 years	X			X		H	M	M	CIP	CIP	Y	$350,000

Action Item	Lead Department/Position	Timeline	**Goal:** Protect Life and Property	**Goal:** Enhance Public Awareness	**Goal:** Protect Natural Environment	**Goal:** Protect Emergency Services	**Goal:** Encourage Partnerships	**Benefit** (L - Low, M - Medium, H - High)	**Cost** (L - Low, M - Medium, H - High)	**Priority** (L - Low, M - Medium, H - High)	**Funding Source:** GF-General Fund, CIP-Capital Improvement Project, HMGP-Hazard Mitigation Grant Program, BRIC-Building Resilient Infrastructure and Communities	**Planning Mechanism:** GF, CIP, HMGP, BRIC, SP - Strategic Plan, UWMP – Urban Water Management Plan	**Buildings & Infrastructure:** Does the Action item involve New and/or Existing Buildings and/or Infrastructure? Yes (Y)	**Comments 2023**
Increase height of fence at District Yard to improve security														
MH-5 Security Fencing - Replace existing fence and increase height of fence at Reservoir 10	Project Manager	2-5 years	X			X		H	M	M	CIP, HMGP, BRIC	CIP	Y	$250,000
MH-6 Security Fencing - Replace existing fence and increase height of fence at Reservoir 14	Project Manager	2-5 years	X			X		H	M	M	CIP, HMGP, BRIC	CIP	Y	$250,000
MH-7 Security Fencing - Replace existing fence and increase height of fence at Reservoir 3 & 13	Project Manager	2-5 years	X			X		H	M	M	CIP, HMGP, BRIC	CIP	Y	$250,000
MH-8 Security Fencing - Replace existing fence and increase height of fence at Reservoir 7	Project Manager	2-5 years	X			X		H	M	M	CIP, HMGP, BRIC	CIP	Y	$250,000
MH-9 Security Fencing - Replace existing fence and increase height of fence at Reservoir 8	Project Manager	2-5 years	X			X		H	M	M	CIP, HMGP, BRIC	CIP	Y	$250,000

Action Item	Lead Department/Position	Timeline	**Goal:** Protect Life and Property	**Goal:** Enhance Public Awareness	**Goal:** Protect Natural Environment	**Goal:** Protect Emergency Services	**Goal:** Encourage Partnerships	**Benefit** (L - Low, M - Medium, H - High)	**Cost** (L - Low, M - Medium, H - High)	**Priority** (L - Low, M - Medium, H - High)	**Funding Source:** GF-General Fund, CIP-Capital Improvement Project, HMGP-Hazard Mitigation Grant Program, BRIC-Building Resilient Infrastructure and Communities	**Planning Mechanism:** GF, CIP, HMGP, BRIC, SP - Strategic Plan, UWMP – Urban Water Management Plan	**Buildings & Infrastructure:** Does the Action item involve New and/or Existing Buildings and/or Infrastructure? Yes (Y)	**Comments 2023**
MH-10 Security Fencing - Replace existing fence and increase height of fence at Reservoir 4 & 9	Project Manager	2-5 years	X			X		H	M	M	CIP, HMGP, BRIC	CIP	Y	$250,000
MH-11 Replace AC Units at district office	Facility Maintenance; Project Manager	2-6 years	X			X		H	L	M	CIP	CIP		$70,000
MH-12 Upgrade Website-graphics, user access, etc.	Education & Outreach Coordinator	1-2 years		X		X	X	H	L	H	CIP	CIP		$15,000
MH-13 New Secondary Warehouse to provide additional storage, will replace Reservoir 1	Project Manager; Facility Maintenance	6 years	X					H	H	L	CIP, HMGP, BRIC	CIP	Y	$1,000,000
MH-14 RCS Structure-Tomich Booster Station	Water Systems Supervisor	Complete	X					H	H	H	CIP	CIP	Y	Completed; $350,000
MH-15 RCS Structure-Granby Booster Station. Built a structure to house chemical injection equipment.	Water Systems Supervisor	Complete	X					H	H	H	CIP	CIP	Y	Completed; $450,000
MH-16 RCS Structure-Artigas Booster Station. Build a structure to house	Water Systems Supervisor	1-5 years	X					H	M	H	CIP, HMGP, BRIC	CIP	Y	$250,000

Action Item	Lead Department/Position	Timeline	Goal: Protect Life and Property	Goal: Enhance Public Awareness	Goal: Protect Natural Environment	Goal: Protect Emergency Services	Goal: Encourage Partnerships	Benefit (L - Low, M - Medium, H - High)	Cost (L - Low, M - Medium, H - High)	Priority (L - Low, M - Medium, H - High)	Funding Source: GF-General Fund, CIP-Capital Improvement Project, HMGP-Hazard Mitigation Grant Program, BRIC-Building Resilient Infrastructure and Communities	Planning Mechanism: GF, CIP, HMGP, BRIC, SP - Strategic Plan, UWMP – Urban Water Management Plan	Buildings & Infrastructure: Does the Action item involve New and/or Existing Buildings and/or Infrastructure? Yes (Y)	Comments 2023
chemical injection equipment.														
MH-17 RCS Structure-Ashbourne Booster Station. Build a structure to house chemical injection equipment.	Water Systems Supervisor	1-5 years	X					H	M	H	CIP, HMGP, BRIC	CIP	Y	$450,000
MH-18 Replacement of Mixers and Water Quality Station at Reservoir 2 & 16	Water Systems Supervisor	1-7 years	X		X	X		H	L	M	CIP	CIP	Y	$70,000
MH-19 Replacement of Mixers and Water Quality Station at Reservoir 4	Water Systems Supervisor	1-7 years	X		X	X		H	L	M	CIP	CIP	Y	$35,000
MH-20 Replacement of Mixers and Water Quality Station at Reservoir 5	Water Systems Supervisor	1-7 years	X		X	X		H	L	M	CIP	CIP	Y	$35,000
MH-21 Replacement of Mixers and Water Quality Station at Reservoir 6	Water Systems Supervisor	1-7 years	X		X	X		H	L	M	CIP	CIP	Y	$35,000
MH-22 Replacement of Mixers and Water Quality Station at Reservoir 7	Water Systems Supervisor	1-7 years	X		X	X		H	L	M	CIP	CIP	Y	$35,000
MH-23 Replacement of Mixers and Water Quality	Water Systems Supervisor	1-7 years	X		X	X		H	L	M	CIP	CIP	Y	$35,000

Action Item	Lead Department/Position	Timeline	**Goal:** Protect Life and Property	**Goal:** Enhance Public Awareness	**Goal:** Protect Natural Environment	**Goal:** Protect Emergency Services	**Goal:** Encourage Partnerships	**Benefit** (L - Low, M - Medium, H - High)	**Cost** (L - Low, M - Medium, H - High)	**Priority** (L - Low, M - Medium, H - High)	**Funding Source:** GF-General Fund, CIP-Capital Improvement Project, HMGP-Hazard Mitigation Grant Program, BRIC-Building Resilient Infrastructure and Communities	**Planning Mechanism:** GF, CIP, HMGP, BRIC, SP - Strategic Plan, UWMP – Urban Water Management Plan	**Buildings & Infrastructure:** Does the Action item involve New and/or Existing Buildings and/or Infrastructure? Yes (Y)	**Comments 2023**
Station at Reservoir 8														
MH-24 Replacement of Mixers and Water Quality Station at Reservoir 10	Water Systems Supervisor	1-7 years	X		X	X		H	L	M	CIP	CIP	Y	$35,000
MH-25 Replacement of Mixers and Water Quality Station at Reservoir 12	Water Systems Supervisor	1-7 years	X		X	X		H	L	M	CIP	CIP	Y	$35,000
MH-26 Replacement of Mixers and Water Quality Station at Reservoir 13	Water Systems Supervisor	1-7 years	X		X	X		H	L	M	CIP	CIP	Y	$35,000
MH-27 Replacement of Mixers and Water Quality Station at Reservoir 14	Water Systems Supervisor	1-7 years	X		X	X		H	L	M	CIP	CIP	Y	$35,000
MH-28 Replacement of Mixers and Water Quality Station at Reservoir 15	Water Systems Supervisor	1-7 years	X		X	X		H	L	M	CIP	CIP	Y	$35,000
MH-29 Replacement of Mixers and Water Quality Station at Reservoir	Water Systems Supervisor	1-7 years	X		X	X		H	L	M	CIP	CIP	Y	$35,000
MH-30 Replacement of Mixers and Water Quality Station at Reservoir	Water Systems Supervisor	1-7 years	X		X	X		H	L	M	CIP	CIP	Y	$35,000
MH-31 Replacement of	Water Systems	1-7 years	X		X	X		H	L	M	CIP	CIP	Y	$35,000

Action Item	Lead Department/Position	Timeline	**Goal:** Protect Life and Property	**Goal:** Enhance Public Awareness	**Goal:** Protect Natural Environment	**Goal:** Protect Emergency Services	**Goal:** Encourage Partnerships	**Benefit** (L - Low, M - Medium, H - High)	**Cost** (L - Low, M - Medium, H - High)	**Priority** (L - Low, M - Medium, H - High)	**Funding Source:** GF-General Fund, CIP-Capital Improvement Project, HMGP-Hazard Mitigation Grant Program, BRIC-Building Resilient Infrastructure and Communities	**Planning Mechanism:** GF, CIP, HMGP, BRIC, SP - Strategic Plan, UWMP – Urban Water Management Plan	**Buildings & Infrastructure:** Does the Action item involve New and/or Existing Buildings and/or Infrastructure? Yes (Y)	**Comments 2023**
Mixers and Water Quality Station at Reservoir	Supervisor													
MH-32 Booster Station Rehab- Harbor Booster Station: Roof, Hatches, Paint, Safety, Lights & MCC	Project Manager; Water Systems Supervisor	2-6 years	X			X		H	M	H	CIP, HMGP, BRIC	CIP	Y	$350,000
MH-33 Booster Station Rehab- Granby Booster Station: Roof, Hatches, Paint, Safety, Lights & MCC	Project Manager; Water Systems Supervisor	2-6 years	X			X		H	M	H	CIP, HMGP, BRIC	CIP	Y	$350,000
MH-34 Booster Station Rehab- Ashbourne Booster Station: Roof, Hatches, Paint, Safety, Lights & MCC	Project Manager; Water Systems Supervisor	2-6 years	X			X		H	M	H	CIP, HMGP, BRIC	CIP	Y	$350,000
MH-35 Booster Station Rehab- Zone 6 Booster Station: Roof, Hatches, Paint, Safety, Lights & MCC	Project Manager; Water Systems Supervisor	2-6 years	X			X		H	M	H	CIP, HMGP, BRIC	CIP	Y	$350,000
MH-36 Booster Station Rehab- Artigas Booster Station: Roof, Hatches, Paint, Safety, Lights & MCC	Project Manager; Water Systems Supervisor	2-6 years	X			X		H	M	H	CIP, HMGP, BRIC	CIP	Y	$350,000
MH-37 Asphalt Repair-Reservoir 6	Project Manager; Water Systems	Complete	X					H	L	H	CIP	CIP	Y	Completed; $100,000

Action Item	Lead Department/Position	Timeline	**Goal:** Protect Life and Property	**Goal:** Enhance Public Awareness	**Goal:** Protect Natural Environment	**Goal:** Protect Emergency Services	**Goal:** Encourage Partnerships	**Benefit** (L - Low, M - Medium, H - High)	**Cost** (L - Low, M - Medium, H - High)	**Priority** (L - Low, M - Medium, H - High)	**Funding Source:** GF-General Fund, CIP-Capital Improvement Project, HMGP-Hazard Mitigation Grant Program, BRIC-Building Resilient Infrastructure and Communities	**Planning Mechanism:** GF, CIP, HMGP, BRIC, SP - Strategic Plan, UWMP – Urban Water Management Plan	**Buildings & Infrastructure:** Does the Action item involve New and/or Existing Buildings and/or Infrastructure? Yes (Y)	**Comments 2023**
	Supervisor													
MH-38 Asphalt Repair-Reservoir 7	Project Manager; Water Systems Supervisor	Complete	X					H	L	H	CIP	CIP	Y	Completed; $200,000
MH-39 Asphalt Repair-Reservoir 4 & 9	Project Manager; Water Systems Supervisor	1-6 years	X					H	L	H	CIP, HMGP, BRIC	CIP	Y	$350,000
MH-40 Asphalt Repair-Reservoir 14	Project Manager; Water Systems Supervisor	1-6 years	X					H	M	H	CIP, HMGP, BRIC	CIP	Y	$350,000
MH-41 Asphalt Repair-Reservoir 3 & 13	Project Manager; Water Systems Supervisor	1-6 years	X					H	M	H	CIP, HMGP, BRIC	CIP	Y	$350,000
MH-42 Asphalt Repair-Reservoir 8	Project Manager; Water Systems Supervisor	1-6 years	X					H	M	H	CIP, HMGP, BRIC	CIP	Y	$350,000
MH-43 Asphalt Repair-Reservoir 12	Project Manager; Water Systems Supervisor	1-6 years	X					H	M	H	CIP, HMGP, BRIC	CIP	Y	$200,000
MH-44 New Recycled Water Groundwater Well on Chestnut Ave, City of Industry	Project Manager; Water Systems Supervisor	5-6 years	X					H	H	M	CIP, HMGP, BRIC	CIP	Y	$1,200,000

Action Item	Lead Department/Position	Timeline	**Goal:** Protect Life and Property	**Goal:** Enhance Public Awareness	**Goal:** Protect Natural Environment	**Goal:** Protect Emergency Services	**Goal:** Encourage Partnerships	**Benefit** (L - Low, M - Medium, H - High)	**Cost** (L - Low, M - Medium, H - High)	**Priority** (L - Low, M - Medium, H - High)	**Funding Source:** GF-General Fund, CIP-Capital Improvement Project, HMGP-Hazard Mitigation Grant Program, BRIC-Building Resilient Infrastructure and Communities	**Planning Mechanism:** GF, CIP, HMGP, BRIC, SP - Strategic Plan, UWMP – Urban Water Management Plan	**Buildings & Infrastructure:** Does the Action item involve New and/or Existing Buildings and/or Infrastructure? Yes (Y)	**Comments 2023**
MH-45 Fullerton Booster Pump Station- Increase capacity and ability to pump recycled water to higher zone	Project Manager; Water Systems Supervisor	4-5 years	X					H	H	M	CIP, HMGP, BRIC	CIP	Y	$1,100,000
MH-46 Rehab Reservoir 10 Replace interior and exterior coating, replace vent, make safety upgrades	Project Manager; Water Systems Supervisor	Complete	X					H	M	H	CIP	CIP	Y	Completed; $750,000
MH-47 Rehab Reservoir JLR1 Replace interior and exterior coating, replace vent, make safety upgrades	Project Manager; Water Systems Supervisor	1-6 years	X					H	M	H	CIP, HMGP, BRIC	CIP	Y	$1,300,000
MH-48 Rehab Reservoir JLR2 Replace interior and exterior coating, replace vent, make safety upgrades	Project Manager; Water Systems Supervisor	1-6 years	X					H	M	H	CIP, HMGP, BRIC	CIP	Y	$1,900,000
MH-49 Rehab Reservoir 7 Replace interior and exterior coating, replace vent, make safety upgrades	Project Manager; Water Systems Supervisor	1-6 years	X					H	M	H	CIP, HMGP, BRIC	CIP	Y	$800,000
MH-50 Rehab Reservoir 8 Replace interior and exterior coating, replace	Project Manager; Water Systems Supervisor	1-6 years	X					H	L	H	CIP, HMGP, BRIC	CIP	Y	$550,000

Action Item	Lead Department/Position	Timeline	**Goal:** Protect Life and Property	**Goal:** Enhance Public Awareness	**Goal:** Protect Natural Environment	**Goal:** Protect Emergency Services	**Goal:** Encourage Partnerships	**Benefit** (L - Low, M - Medium, H - High)	**Cost** (L - Low, M - Medium, H - High)	**Priority** (L - Low, M - Medium, H - High)	**Funding Source:** GF-General Fund, CIP-Capital Improvement Project, HMGP-Hazard Mitigation Grant Program, BRIC-Building Resilient Infrastructure and Communities	**Planning Mechanism:** GF, CIP, HMGP, BRIC, SP - Strategic Plan, UWMP – Urban Water Management Plan	**Buildings & Infrastructure:** Does the Action item involve New and/or Existing Buildings and/or Infrastructure? Yes (Y)	**Comments 2023**
vent, make safety upgrades														
MH-51 Rehab Reservoir 9 Replace interior and exterior coating, replace vent, make safety upgrades	Project Manager; Water Systems Supervisor	1-6 years	X					H	L	H	CIP, HMGP, BRIC	CIP	Y	$450,000
MH-52 Rehab Reservoir 12 Replace interior and exterior coating, replace vent, make safety upgrades	Project Manager; Water Systems Supervisor	1-6 years	X					H	H	H	CIP, HMGP, BRIC	CIP	Y	$500,000
MH-53 Rehab Reservoir 14 Replace interior and exterior coating, replace vent, make safety upgrades	Project Manager; Water Systems Supervisor	1-6 years	X					H	M	H	CIP, HMGP, BRIC	CIP	Y	$500,000
MH-54 Rehab Cuatro Booster- Install structure to house pumps, MCC, etc. Install SCADA, security system, replace security fencing, etc.	Project Manager; Water Systems Supervisor	1-2 years	X					H	L	H	CIP, HMGP, BRIC	CIP	Y	$750,000
MH-55 Scada Server Upgrades- Software, Security, failover, etc.	Project Manager; Water Systems Supervisor	3-6 years	X					H	M	H	CIP	CIP	Y	$250,000
MH-56 Granby Booster	Water Systems	Complete	X					H	L	H	CIP	CIP	Y	Completed;

Action Item	Lead Department/Position	Timeline	**Goal:** Protect Life and Property	**Goal:** Enhance Public Awareness	**Goal:** Protect Natural Environment	**Goal:** Protect Emergency Services	**Goal:** Encourage Partnerships	**Benefit** (L - Low, M - Medium, H - High)	**Cost** (L - Low, M - Medium, H - High)	**Priority** (L - Low, M - Medium, H - High)	**Funding Source:** GF-General Fund, CIP-Capital Improvement Project, HMGP-Hazard Mitigation Grant Program, BRIC-Building Resilient Infrastructure and Communities	**Planning Mechanism:** GF, CIP, HMGP, BRIC, SP - Strategic Plan, UWMP – Urban Water Management Plan	**Buildings & Infrastructure:** Does the Action item involve New and/or Existing Buildings and/or Infrastructure? Yes (Y)	**Comments 2023**
Station Valve Replacement	Supervisor													$50,000
MH-57 Tomich Booster Station Valve Replacement	Water Systems Supervisor	1-6 years	X					H	M	H	CIP	CIP	Y	$50,000
MH-58 Granby Booster Station Valve Replacement	Water Systems Supervisor	1-6 years	X					H	M	H	CIP	CIP	Y	$50,000
MH-59 Harbor Booster Station Valve Replacement	Water Systems Supervisor	1-6 years	X					H	M	H	CIP	CIP	Y	$60,000
MH-60 Ashbourne Booster Station Valve Replacement	Water Systems Supervisor	1-6 years	X					H	M	H	CIP	CIP	Y	$60,000
MH-61 Zone 6 Booster Station Valve Replacement	Water Systems Supervisor	1-6 years	X					H	M	H	CIP, HMGP, BRIC	CIP	Y	$60,000
MH-62 Artigas Booster Station Valve Replacement	Water Systems Supervisor	1-6 years	X					H	M	H	CIP, HMGP, BRIC	CIP	Y	$60,000
MH-63 Upgrade Security for Remote Sites- Granby Booster Station	Facility Maintenance; Water Systems Supervisor	Complete	X		X	X		H	M	H	CIP	CIP	Y	Completed; $40,000
MH-64 Upgrade Security for Remote Site- Whittier Booster Station	Facility Maintenance; Water Systems Supervisor	Complete	X		X	X	X	H	M	H	CIP	CIP	Y	Completed; $40,000
MH-65 Upgrade Security for Remote Sites- Tomich	Facility Maintenance;	Complete	X		X	X		H	M	H	CIP	CIP	Y	Completed; $40,000

Action Item	Lead Department/Position	Timeline	**Goal:** Protect Life and Property	**Goal:** Enhance Public Awareness	**Goal:** Protect Natural Environment	**Goal:** Protect Emergency Services	**Goal:** Encourage Partnerships	**Benefit** (L - Low, M - Medium, H - High)	**Cost** (L - Low, M - Medium, H - High)	**Priority** (L - Low, M - Medium, H - High)	**Funding Source:** GF-General Fund, CIP-Capital Improvement Project, HMGP-Hazard Mitigation Grant Program, BRIC-Building Resilient Infrastructure and Communities	**Planning Mechanism:** GF, CIP, HMGP, BRIC, SP - Strategic Plan, UWMP – Urban Water Management Plan	**Buildings & Infrastructure:** Does the Action item involve New and/or Existing Buildings and/or Infrastructure? Yes (Y)	**Comments 2023**
Booster Station	Water Systems Supervisor													
MH-66 Upgrade Security for Remote Sites- Reservoir 8	Facility Maintenance; Water Systems Supervisor	Complete	X		X	X		H	M	H	CIP	CIP	Y	Completed; $40,000
MH-67 Upgrade Security for Remote Sites- Artigas Booster Station	Facility Maintenance; Water Systems Supervisor	1-5 years	X		X	X		H	L	H	CIP, HMGP, BRIC	CIP	Y	$40,000
MH-68 Upgrade Security for Remote Sites- Ashbourne Booster Station	Facility Maintenance; Water Systems Supervisor	1-5 years	X		X	X		H	L	H	CIP, HMGP, BRIC	CIP	Y	$40,000
MH-69 Upgrade Security for Remote Sites- Harbor Booster Station	Facility Maintenance; Water Systems Supervisor	1-5 years	X		X	X		H	L	H	CIP, HMGP, BRIC	CIP	Y	$40,000
MH-70 Upgrade Security for Remote Sites- Zone 6 Booster Station	Facility Maintenance; Water Systems Supervisor	1-5 years	X		X	X		H	L	H	CIP, HMGP, BRIC	CIP	Y	$40,000
MH-71 Upgrade Security for Remote Sites- Reservoir	Facility Maintenance;	1-5 years	X		X	X		H	L	H	CIP, HMGP, BRIC	CIP	Y	$40,000

Action Item	Lead Department/Position	Timeline	**Goal:** Protect Life and Property	**Goal:** Enhance Public Awareness	**Goal:** Protect Natural Environment	**Goal:** Protect Emergency Services	**Goal:** Encourage Partnerships	**Benefit** (L - Low, M - Medium, H - High)	**Cost** (L - Low, M - Medium, H - High)	**Priority** (L - Low, M - Medium, H - High)	**Funding Source:** GF-General Fund, CIP-Capital Improvement Project, HMGP-Hazard Mitigation Grant Program, BRIC-Building Resilient Infrastructure and Communities	**Planning Mechanism:** GF, CIP, HMGP, BRIC, SP - Strategic Plan, UWMP – Urban Water Management Plan	**Buildings & Infrastructure:** Does the Action item involve New and/or Existing Buildings and/or Infrastructure? Yes (Y)	**Comments 2023**
3 & 13	Water Systems Supervisor													
MH-72 Upgrade Security for Remote Sites- Reservoir 7	Facility Maintenance; Water Systems Supervisor	1-5 years	X		X	X		H	L	H	CIP, HMGP, BRIC	CIP	Y	$40,000
MH-73 Upgrade Security for Remote Sites- Reservoir 14	Facility Maintenance; Water Systems Supervisor	1-5 years	X		X	X		H	L	H	CIP, HMGP, BRIC	CIP	Y	$40,000
MH-74 Rehab Pump- Zone 6 Booster Station	Water Systems Supervisor	1-6 years	X					H	L	H	CIP, HMGP, BRIC	CIP	Y	$75,000
MH-75 Rehab Pump- Cuatro Booster Station	Water Systems Supervisor	1-6 years	X					H	L	H	CIP, HMGP, BRIC	CIP	Y	$75,000
MH-76 Rehab Pump- Artigas Booster Station	Water Systems Supervisor	1-6 years	X					H	L	H	CIP, HMGP, BRIC	CIP	Y	$75,000
MH-77 Rehab Pump- Ashbourne Booster Station	Water Systems Supervisor	1-6 years	X					H	M	H	CIP, HMGP, BRIC	CIP	Y	$75,000
MH-78 Rehab Pump- Harbor Booster Station	Water Systems Supervisor	1-6 years	X					H	M	H	CIP, HMGP, BRIC	CIP	Y	$75,000
MH-79 Rehab Pump- Granby Booster Station	Water Systems Supervisor	1-6 years	X					H	M	H	CIP, HMGP, BRIC	CIP	Y	$75,000
MH-80 Rehab Pump- Fullerton Booster Station	Water Systems Supervisor	1-6 years	X					H	M	H	CIP, HMGP, BRIC	CIP	Y	$75,000

Action Item	Lead Department/Position	Timeline	**Goal:** Protect Life and Property	**Goal:** Enhance Public Awareness	**Goal:** Protect Natural Environment	**Goal:** Protect Emergency Services	**Goal:** Encourage Partnerships	**Benefit** (L - Low, M - Medium, H - High)	**Cost** (L - Low, M - Medium, H - High)	**Priority** (L - Low, M - Medium, H - High)	**Funding Source:** GF-General Fund, CIP-Capital Improvement Project, HMGP-Hazard Mitigation Grant Program, BRIC-Building Resilient Infrastructure and Communities	**Planning Mechanism:** GF, CIP, HMGP, BRIC, SP - Strategic Plan, UWMP – Urban Water Management Plan	**Buildings & Infrastructure:** Does the Action item involve New and/or Existing Buildings and/or Infrastructure? Yes (Y)	**Comments 2023**
MH-81 Restoration of JWL Reservoir Vault Lid	Project Manager; Water Systems Supervisor	1-2 years	X				X	H	L	H	CIP	CIP	Y	$15,000
MH-82 PLC Upgrade SCADA Cabinets	Project Manager; Water Systems Supervisor	3 years	X					H	M	H	CIP	CIP	Y	$450,000
MH-83 Valve Replacement (La Seda, Cantaria, Altario, Galleano, Johnson, Bixby)	Project Manager; Field Operations Supervisor	1-6 years	X		X			H	H	H	CIP	CIP	Y	$2,075,000
MH-84 Replace Large Meters	Field Operations Supervisor	1-6 years	X		X			H	M	H	CIP	CIP	Y	$663,400
MH-85 Meter/Module Replacements	Field Operations Supervisor	6 years	X		X		X	H	M	M	CIP, HMGP, BRIC	CIP	Y	$500,000
MH-86 Replace Service Lines	Project Manager; Field Operations Supervisor	2-6 years	X		X	X	X	H	H	H	CIP, HMGP, BRIC	CIP	Y	$625,000
MH-87 Blowoffs Replacement	Field Operations Supervisor	1-6 years	X		X			H	M	H	CIP	CIP	Y	$285,000
MH-88 Fullerton Grade Separation	Project Manager	1-2 years	X			X	X	H	H	H	CIP	CIP	Y	$1,224,000
MH-89 Six Basins	General Manager	1-2 years	X				X	H	H	H	CIP	CIP	Y	$1,400,000
MH-90 Mainline Replacements	Project Manager; Field Operations	Ongoing	X		X	X	X	H	H	H	CIP	CIP	Y	

Action Item	Lead Department/Position	Timeline	Goal: Protect Life and Property	Goal: Enhance Public Awareness	Goal: Protect Natural Environment	Goal: Protect Emergency Services	Goal: Encourage Partnerships	Benefit (L - Low, M - Medium, H - High)	Cost (L - Low, M - Medium, H - High)	Priority (L - Low, M - Medium, H - High)	Funding Source: GF-General Fund, CIP-Capital Improvement Project, HMGP-Hazard Mitigation Grant Program, BRIC-Building Resilient Infrastructure and Communities	Planning Mechanism: GF, CIP, HMGP, BRIC, SP - Strategic Plan, UWMP – Urban Water Management Plan	Buildings & Infrastructure: Does the Action item involve New and/or Existing Buildings and/or Infrastructure? Yes (Y)	Comments 2023
	Supervisor													
MH-91 2.5 Ton Dump Truck	Field Operations Supervisor	1 year	X					H	L	H	CIP	CIP		$150,000
MH-92 10 Wheel Dump Truck	Field Operations Supervisor	4 years	X					H	M	M	CIP	CIP		$275,000
MH-93 John Deere Flatbed Cart	Field Operations Supervisor	2 years	X					H	L	H	CIP	CIP		$25,000
MH-94 EOC Trailer to operate in the event of an emergency	Project Manager; Compliance & Safety Coordinator	1-2 years	X		X	X	X	H	M	H	CIP	CIP		$200,000
MH-95 CAT 430F2 IT	Field Operations Supervisor	3 years	X					H	L	M	CIP	CIP		$150,000
MH-96 Vactor Truck	Field Operations Supervisor	5-6 years	X				X	H	M	L	CIP, HMGP, BRIC	CIP	Y	$400,000
MH-97 Purchase vehicles & equipment- Field Trucks (#5 & #11) F150, F350 4x4 Crew Cab, Short Bed	Facility Maintenance	1-6 years					X	H	M	H	CIP, HMGP, BRIC	CIP	Y	$425,000
MH-98 Block Retaining Wall behind reservoirs 5 & 11 to provide space for pipe storage	Project Manager	1-2 years	X					H	M	H	CIP	CIP	Y	$750,000
MH-99 District Main Office-	Project Manager;	1-3 years	X					H	L	M	CIP	CIP		$500,000

Action Item	Lead Department/Position	Timeline	**Goal:** Protect Life and Property	**Goal:** Enhance Public Awareness	**Goal:** Protect Natural Environment	**Goal:** Protect Emergency Services	**Goal:** Encourage Partnerships	**Benefit** (L - Low, M - Medium, H - High)	**Cost** (L - Low, M - Medium, H - High)	**Priority** (L - Low, M - Medium, H - High)	**Funding Source:** GF-General Fund, CIP-Capital Improvement Project, HMGP-Hazard Mitigation Grant Program, BRIC-Building Resilient Infrastructure and Communities	**Planning Mechanism:** GF, CIP, HMGP, BRIC, SP - Strategic Plan, UWMP – Urban Water Management Plan	**Buildings & Infrastructure:** Does the Action item involve New and/or Existing Buildings and/or Infrastructure? Yes (Y)	**Comments 2023**
Asphalt and paving	Facility Maintenance													
MH-100 Recycled Water Retrofits. This multiyear project will fund the conversion of customers from potable water to recycled water.	Project Manager	Ongoing	X	X			X	H	L	L	CIP	CIP	Y	$100K/per year
MH-101 Recycled Water Valve replacements are part of ongoing operations and maintenance to ensure reliable service.	Project Manager	Ongoing	X	X			X	H	L	L	CIP	CIP	Y	$100K/per year
MH-102 Purchase a mass notification system “911” for Public Notification and Guidance during Emergency Events.	Compliance & Safety Coordinator; Education & Outreach Coordinator	3-5 years	X	X		X	X	M	L	M	CIP, HMGP, BRIC	GF		$15,000
MH-103 Purchase a system that also allows employees to provide secured 2-way electronic communications and has an app to see	Project Manager; Compliance & Safety Coordinator	4-7 years	X	X		X	X	H	M	L	CIP, HMGP, BRIC	CIP	Y	

Action Item	Lead Department/Position	Timeline	Goal: Protect Life and Property	Goal: Enhance Public Awareness	Goal: Protect Natural Environment	Goal: Protect Emergency Services	Goal: Encourage Partnerships	Benefit (L - Low, M - Medium, H - High)	Cost (L - Low, M - Medium, H - High)	Priority (L - Low, M - Medium, H - High)	Funding Source: GF-General Fund, CIP-Capital Improvement Project, HMGP-Hazard Mitigation Grant Program, BRIC-Building Resilient Infrastructure and Communities	Planning Mechanism: GF, CIP, HMGP, BRIC, SP - Strategic Plan, UWMP – Urban Water Management Plan	Buildings & Infrastructure: Does the Action item involve New and/or Existing Buildings and/or Infrastructure? Yes (Y)	Comments 2023
existing situational status maps and reports, receives Situation/Status information, and can integrate with GIS Software.														
MH-104 Purchase & install Emergency Response Notification and/or Information System for our Emergency Operation Center that will also include visual & audible hubs/monitors throughout the "employee only" areas on campus that is capable of remotely displaying and sending audible emergency alert messaging for employees and ties into software.	Project Manager; Compliance & Safety Coordinator	3-5 years	X	X		X	X	H	M	M	CIP, HMGP, BRIC	CIP	Y	
MH-105 Design & Build Educational & Training Facility near/on the main	Project Manager; Compliance & Safety	5-10 years	X	X		X	X	H	H	H	CIP, HMGP, BRIC	CIP	Y	$2M+

Action Item	Lead Department/Position	Timeline	**Goal:** Protect Life and Property	**Goal:** Enhance Public Awareness	**Goal:** Protect Natural Environment	**Goal:** Protect Emergency Services	**Goal:** Encourage Partnerships	**Benefit** (L - Low, M - Medium, H - High)	**Cost** (L - Low, M - Medium, H - High)	**Priority** (L - Low, M - Medium, H - High)	**Funding Source:** GF-General Fund, CIP-Capital Improvement Project, HMGP-Hazard Mitigation Grant Program, BRIC-Building Resilient Infrastructure and Communities	**Planning Mechanism:** GF, CIP, HMGP, BRIC, SP - Strategic Plan, UWMP – Urban Water Management Plan	**Buildings & Infrastructure:** Does the Action item involve New and/or Existing Buildings and/or Infrastructure? Yes (Y)	**Comments 2023**
campus	Coordinator; Education & Outreach Coordinator													
MH-106 Install more Hydration Stations at Schools	Education & Outreach Coordinator	3-7 years	X	X			X	M	L	L	CIP, HMGP, BRIC	CIP	Y	$100,000
MH-107 A mobile hydration station –to deploy to community events and emergency situations to provide drinking water. It will have spouts as well as larger bottled water refill stations to allow visitors to have a drink or refill their own bottle. The Water Wagon would be used instead of bottled water at community events, helping to improve the environment by reducing the waste stream. In emergency situations The Water	Project Manager; Education & Outreach Coordinator	7 years	X	X	X		X	H	M	L	CIP, HMGP, BRIC	CIP	Y	

Action Item	Lead Department/Position	Timeline	**Goal:** Protect Life and Property	**Goal:** Enhance Public Awareness	**Goal:** Protect Natural Environment	**Goal:** Protect Emergency Services	**Goal:** Encourage Partnerships	**Benefit** (L - Low, M - Medium, H - High)	**Cost** (L - Low, M - Medium, H - High)	**Priority** (L - Low, M - Medium, H - High)	**Funding Source:** GF-General Fund, CIP-Capital Improvement Project, HMGP-Hazard Mitigation Grant Program, BRIC-Building Resilient Infrastructure and Communities	**Planning Mechanism:** GF, CIP, HMGP, BRIC, SP - Strategic Plan, UWMP – Urban Water Management Plan	**Buildings & Infrastructure:** Does the Action item involve New and/or Existing Buildings and/or Infrastructure? Yes (Y)	**Comments 2023**
Wagon can provide water on a larger scale and be deployed to a neighborhood that needs water in the event of a fire or water quality concern. The water is RWD tap water, affirming the message that RWD tap water is safe to drink and tastes great. The Water Wagon would feature educational signage for visitors to learn more about tap water.														
MH-108 Construct Warehouse Canopies	Project Manager	1-5 years	X					H	M	M	CIP, HMGP, BRIC	CIP	Y	$450,000
MH-109 Recycled Water Master Plan Update	General Manager	3-10 years					X	H	H	L	HMGP, BRIC	CIP	Y	$200,000
MH-110 Recycled Water Master Plan- System Expansion	Project Manager; Water Systems Supervisor	3-10 years					X	H	H	L	HMGP, BRIC	CIP	Y	$55,000,000
MH-111 MCC Rehab Project- Harbor Pump Station	Project Manager; Water Systems Supervisor	3-6 years	X			X		M	H	M	CIP, HMGP, BRIC	CIP	Y	$250,000

Action Item	Lead Department/Position	Timeline	**Goal:** Protect Life and Property	**Goal:** Enhance Public Awareness	**Goal:** Protect Natural Environment	**Goal:** Protect Emergency Services	**Goal:** Encourage Partnerships	**Benefit** (L - Low, M - Medium, H - High)	**Cost** (L - Low, M - Medium, H - High)	**Priority** (L - Low, M - Medium, H - High)	**Funding Source:** GF-General Fund, CIP-Capital Improvement Project, HMGP-Hazard Mitigation Grant Program, BRIC-Building Resilient Infrastructure and Communities	**Planning Mechanism:** GF, CIP, HMGP, BRIC, SP - Strategic Plan, UWMP – Urban Water Management Plan	**Buildings & Infrastructure:** Does the Action item involve New and/or Existing Buildings and/or Infrastructure? Yes (Y)	**Comments 2023**
MH-112 MCC Rehab Project- Ashbourne Pump Station	Project Manager; Water Systems Supervisor	3-6 years	X			X		M	H	M	CIP, HMGP, BRIC	CIP	Y	$250,000
MH-113 MCC Rehab Project- Zone 6 Pump Station	Project Manager; Water Systems Supervisor	3-6 years	X			X		M	H	M	CIP, HMGP, BRIC	CIP	Y	$250,000
MH-114 MCC Rehab Project- Granby Pump Station	Project Manager; Water Systems Supervisor	3-6 years	X			X		M	H	M	CIP, HMGP, BRIC	CIP	Y	$250,000
MH-115 MCC Rehab Project- Fullerton Pump Station	Project Manager; Water Systems Supervisor	3-6 years	X			X		M	H	M	CIP, HMGP, BRIC	CIP	Y	$250,000
MH-116 MCC Rehab Project- Artigas Pump Station	Project Manager; Water Systems Supervisor	3-6 years	X			X		M	H	M	CIP, HMGP, BRIC	CIP	Y	$250,000
MH-117 Purchase Drones – Reservoir & Site Inspections	Project Manager; Water Systems Supervisor	3-6 years	X	X		X	X	M	H	L	HMGP, BRIC	CIP	Y	$25,000
MH-118 Hire Consultant for Emergency Response Plan (ERP)	Compliance & Safety Coordinator	Completed	X	X	X	X	X	H	M	H	CIP	CIP		Completed; $200,000
MH-119 Hire Consultant for Emergency Response Plan (ERP)	Compliance & Safety Coordinator	3-4 years	X	X	X	X	X	H	M	H	CIP, HMGP, BRIC	CIP		$200,000

Action Item	Lead Department/Position	Timeline	**Goal:** Protect Life and Property	**Goal:** Enhance Public Awareness	**Goal:** Protect Natural Environment	**Goal:** Protect Emergency Services	**Goal:** Encourage Partnerships	**Benefit** (L - Low, M - Medium, H - High)	**Cost** (L - Low, M - Medium, H - High)	**Priority** (L - Low, M - Medium, H - High)	**Funding Source:** GF-General Fund, CIP-Capital Improvement Project, HMGP-Hazard Mitigation Grant Program, BRIC-Building Resilient Infrastructure and Communities	**Planning Mechanism:** GF, CIP, HMGP, BRIC, SP - Strategic Plan, UWMP – Urban Water Management Plan	**Buildings & Infrastructure:** Does the Action item involve New and/or Existing Buildings and/or Infrastructure? Yes (Y)	**Comments 2023**
MH-120 Hire an Emergency Response Coordinator	General Manager	4-8 years	X	X	X	X	X	M	L	L	GF	GF		
Earthquake Action Items														
EQ-1 Design and construct seismic upgrades for reservoirs in need (e.g., EQ valves, etc.).	Project Manager; Water Systems Supervisor	5-10 years	X		X	X		M	M	M	CIP	CIP	Y	
EQ-2 Install earthquake control valves at reservoirs lacking the capability to close reservoirs and prevent reservoir drainage and assist availability for use of water for fire protection.	Project Manager; Water Systems Supervisor	5-10 years	X		X	X		M	L	M	CIP	CIP	Y	
EQ-3 Fund and conduct Reservoir Seismic Vulnerability Study. Hire a consultant to conduct study on the structural stability of the existing reservoirs and the feasibility of retrofitting reservoir sites with flexible	Project Manager; Water Systems Supervisor	3-4 years	X	X		X		M	M	H	CIP	CIP	Y	$250,000

Action Item	Lead Department/Position	Timeline	**Goal:** Protect Life and Property	**Goal:** Enhance Public Awareness	**Goal:** Protect Natural Environment	**Goal:** Protect Emergency Services	**Goal:** Encourage Partnerships	**Benefit** (L - Low, M - Medium, H - High)	**Cost** (L - Low, M - Medium, H - High)	**Priority** (L - Low, M - Medium, H - High)	**Funding Source:** GF-General Fund, CIP-Capital Improvement Project, HMGP-Hazard Mitigation Grant Program, BRIC-Building Resilient Infrastructure and Communities	**Planning Mechanism:** GF, CIP, HMGP, BRIC, SP - Strategic Plan, UWMP – Urban Water Management Plan	**Buildings & Infrastructure:** Does the Action item involve New and/or Existing Buildings and/or Infrastructure? Yes (Y)	**Comments 2023**
couplings and earthquake automatic valve controllers.														
Drought Action Items														
DR-1 Design and construct water supply connection with La Habra Heights to provide RWD with alternative water supply source. This was a multi-agency project with Walnut Valley Water District through Puente Basin Water Agency. Project included pipeline, connection structure with chemical injection, meter, etc.	General Manager; Project Manager	Complete	X		X	X	X	H	H	M	CIP	CIP	Y	Completed; $2,000,000
DR-2 Design and construct water supply connection with California Domestic Water Company to provide RWD with alternative water supply source. This was a	General Manager; Project Manager	Complete	X		X	X	X	H	H	M	CIP	CIP	Y	Completed; $3,000,000

Action Item	Lead Department/Position	Timeline	**Goal:** Protect Life and Property	**Goal:** Enhance Public Awareness	**Goal:** Protect Natural Environment	**Goal:** Protect Emergency Services	**Goal:** Encourage Partnerships	**Benefit** (L - Low, M - Medium, H - High)	**Cost** (L - Low, M - Medium, H - High)	**Priority** (L - Low, M - Medium, H - High)	**Funding Source:** GF-General Fund, CIP-Capital Improvement Project, HMGP-Hazard Mitigation Grant Program, BRIC-Building Resilient Infrastructure and Communities	**Planning Mechanism:** GF, CIP, HMGP, BRIC, SP - Strategic Plan, UWMP – Urban Water Management Plan	**Buildings & Infrastructure:** Does the Action item involve New and/or Existing Buildings and/or Infrastructure? Yes (Y)	**Comments 2023**
multi-agency project with Walnut Valley Water District through Puente Basin Water Agency. Project included pipeline, pump station with chemical injection, meter, pressure reducing station, etc.														
DR-3 Design and construct water supply connection… Six Basins project	General Manager; Project Manager		X		X	X	X	H	H	M	CIP, HMGP, BRIC	CIP	Y	
DR-4 Design and construct water supply connection… PBWA project	Assistant General Manager; Project Manager		X		X	X	X	H	H	M	CIP, HMGP, BRIC	CIP	Y	
Utility Related Action Items														
UR-1 Purchase additional Emergency Portable Generator to provide power to booster station	Water Systems Supervisor	Complete	X		X	X		H	M	H	CIP	CIP	Y	Completed; $200,000
UR-2 Purchase additional Emergency Portable Generator to provide power to booster station	Water Systems Supervisor	2-8 years	X		X	X		H	M	H	CIP, HMGP, BRIC	CIP	Y	$200,000

Action Item	Lead Department/Position	Timeline	**Goal:** Protect Life and Property	**Goal:** Enhance Public Awareness	**Goal:** Protect Natural Environment	**Goal:** Protect Emergency Services	**Goal:** Encourage Partnerships	**Benefit** (L - Low, M - Medium, H - High)	**Cost** (L - Low, M - Medium, H - High)	**Priority** (L - Low, M - Medium, H - High)	**Funding Source:** GF-General Fund, CIP-Capital Improvement Project, HMGP-Hazard Mitigation Grant Program, BRIC-Building Resilient Infrastructure and Communities	**Planning Mechanism:** GF, CIP, HMGP, BRIC, SP - Strategic Plan, UWMP – Urban Water Management Plan	**Buildings & Infrastructure:** Does the Action item involve New and/or Existing Buildings and/or Infrastructure? Yes (Y)	**Comments 2023**
UR-3 Purchase additional Emergency Portable Generator to provide power to booster station	Water Systems Supervisor	2-8 years	X		X	X		H	M	H	CIP, HMGP, BRIC	CIP	Y	$200,000
UR-4 Purchase additional Emergency Portable Generator to provide power to booster station	Water Systems Supervisor	2-8 years	X		X	X		H	M	H	CIP, HMGP, BRIC	CIP	Y	$200,000
UR-5 Purchase additional Emergency Portable Generator to provide power to booster station	Water Systems Supervisor	2-8 years	X		X	X		H	M	H	CIP, HMGP, BRIC	CIP	Y	$200,000
UR-6 Purchased two (2) Portable Fuel Trailers	Facility Maintenance	Completed	X		X	X		H	L	H	CIP	CIP	Y	Completed $35,000 Each
UR-7 Purchase either 1 or 2 additional Portable Fuel Trailers	Facility Maintenance	2-4 years	X		X	X		H	M	H	CIP, HMGP, BRIC	CIP	Y	$35,000 Each
UR-8 Purchased two (2) Suitcase Generators	Facility Maintenance	Completed	X		X	X		H	L	H	CIP	CIP	Y	Completed
UR-9 Purchase 3 additional Suitcase Generators	Facility Maintenance	2-4 years	X		X	X		H	L	H	CIP, HMGP, BRIC	CIP	Y	
UR-10 Install solar panel carports and solar panels on available rooftops	Project Manager; Water Systems Supervisor	5-10 years	X		X	X	X	M	H	L	HMGP, BRIC	CIP	Y	$250,000

Action Item	Lead Department/Position	Timeline	**Goal:** Protect Life and Property	**Goal:** Enhance Public Awareness	**Goal:** Protect Natural Environment	**Goal:** Protect Emergency Services	**Goal:** Encourage Partnerships	**Benefit** (L - Low, M - Medium, H - High)	**Cost** (L - Low, M - Medium, H - High)	**Priority** (L - Low, M - Medium, H - High)	**Funding Source:** GF-General Fund, CIP-Capital Improvement Project, HMGP-Hazard Mitigation Grant Program, BRIC-Building Resilient Infrastructure and Communities	**Planning Mechanism:** GF, CIP, HMGP, BRIC, SP - Strategic Plan, UWMP – Urban Water Management Plan	**Buildings & Infrastructure:** Does the Action item involve New and/or Existing Buildings and/or Infrastructure? Yes (Y)	**Comments 2023**
across main campus.														
Wildfire Action Items														
WLD-1 Vegetation and Brush Removal (weed abatement) to areas surrounding District facilities within wildfire hazard zones.	Water Systems Supervisor	Ongoing	X		X	X	X	H	L	M	CIP	CIP	Y	$30,000/annually
WLD-2 Retrofit existing units to fire suppression system in the IT server room in the Admin Bldg.	Project Manager	1-3 years	X			X	X	H	L	L	CIP, HMGP, BRIC	CIP	Y	$90,000
WLD-3 Retrofit/Resurface all pump buildings, roofs, reservoirs and facilities with Flame Retardant or resistant materials/coatings	Project Manager; Water Systems Supervisor	5-10 years	X			X	X	H	H	H	CIP, HMGP, BRIC	CIP	Y	$1M-$3M
WLD-4 Retrofit with fire-resistant roofs for all pump houses.	Project Manager; Water Systems Supervisor	3-5 years	X		X	X		H	M	M	HMGP, BRIC	CIP	Y	
Terrorism Action Items														
T-1 Replace exterior	Project Manager;	5-7 years	X			X		H	M	M	CIP, HMGP,	CIP	Y	$500,000

Action Item	Lead Department/Position	Timeline	**Goal:** Protect Life and Property	**Goal:** Enhance Public Awareness	**Goal:** Protect Natural Environment	**Goal:** Protect Emergency Services	**Goal:** Encourage Partnerships	**Benefit** (L - Low, M - Medium, H - High)	**Cost** (L - Low, M - Medium, H - High)	**Priority** (L - Low, M - Medium, H - High)	**Funding Source:** GF-General Fund, CIP-Capital Improvement Project, HMGP-Hazard Mitigation Grant Program, BRIC-Building Resilient Infrastructure and Communities	**Planning Mechanism:** GF, CIP, HMGP, BRIC, SP - Strategic Plan, UWMP – Urban Water Management Plan	**Buildings & Infrastructure:** Does the Action item involve New and/or Existing Buildings and/or Infrastructure? Yes (Y)	**Comments 2023**
windows with Bullet-Resistant glass in areas with public access	Compliance & Safety Coordinator										BRIC			
T-2 Partner with the Law Enforcement for access/sharing. May require additional hardware to support the project.	Compliance & Safety Coordinator	3-5 years	X			X	X	H	H	L	CIP, HMGP, BRIC	CIP	Y	
T-3 Cyber Security Assessment, Testing and Protection	General Manager	1-5 years	X		X	X	X	H	H	H	CIP, HMGP, BRIC	CIP		

Plan Maintenance

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 MJHMP Planning Team and the Rowland Water District will integrate public participation throughout the plan maintenance process.

Q&A | ELEMENT D: PLAN MAINTENANCE | D2-a.

Q: Does the plan describe the process that will be followed to track the progress/status of the mitigation actions identified within the Mitigation Strategy, along with when this process will occur and who will be responsible for the process? (Requirement 44 CFR § 201.6(c)(4)(i))

A: See **Local Mitigation Officer, Method and Scheduling of Plan Implementation, Monitoring and Implementing the Plan** below.

Local Mitigation Officer

The Planning Team that was involved in research and writing of the Plan will also be responsible for implementation. The MJHMP Planning Team will be led by Planning Team Chair Tom Coleman. Mr. Coleman will also serve as the RWD Planning Team Chair as well as the Local Mitigation Officer following a declared disaster. Each of the other participating agencies will have its own Planning Team Chair who will serve as their Local Mitigation Officer (see separately attached Annexes).

Under the direction of the MJHMP Planning Team Chair Tom Coleman, the MJHMP Planning Team will reconvene on an annual basis to monitor and evaluate progress on the Base Plan and Annexes.

Under the direction of the Local Mitigation Officer, the RWD Planning Team will take responsibility for plan maintenance and implementation of the MJHMP Base Plan. The Local Mitigation Officer will facilitate the RWD Planning Team meetings and will assign tasks such as updating and presenting the Plan to the members of the RWD Planning Team. Plan implementation and evaluation will be a shared responsibility among all of the Planning Team members. The Local Mitigation Officer will coordinate with the RWD leadership to ensure funding for 5-year updates to Plan as required by FEMA.

The Planning Team will be responsible for coordinating the implementation of the Plan's action items and undertaking the formal review process. The Local Mitigation Officer will be authorized to make changes in assignments to the current RWD Planning Team.

The RWD Planning Team will meet no less than bi-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. The Local Mitigation Officer or designee will be responsible for contacting the Planning Team members and organizing the bi-annual meetings.

Plan updates will need to be approved by FEMA every 5 years. However adequate time should be allowed to secure grant funding (if necessary), allow adequate time for a thorough planning process, and time for the formal review by Cal OES and FEMA. All said, if grant funding is

going to be needed, the update timeline should begin 3 years prior to the plan's due date to FEMA.

Method and Scheduling of Plan Implementation

	Year 1	Year 2	Year 3	Year 4	Year 5
Monitoring					
MJHMP Planning Team	XX	XX	XX	XX	XX
RWD Planning Team	XXXX	XXXX	XXXX	XXXX	XXXX
Evaluating					
MJHMP Planning Team	X	X	X	X	X
RWD Planning Team	X	X	X	X	X
Updating					
MJHMP Planning Team					X
RWD Planning Team					X

Monitoring and Implementing the Plan

Monitoring the Plan

The MJHMP Planning Team Chair will convene the Planning Team on a bi-annual basis to gather status updates on the mitigation action items for the Base Plan and Annexes. Additionally, each of the participating agencies will hold bi-annual meetings with their respective Planning Teams to monitor their own Annex.

The RWD Planning Team Chair Local Mitigation Officer will hold quarterly meetings with the RWD Planning Team to gather status updates on the mitigation action items. These meetings will provide an opportunity to discuss the progress of the action items and maintain the partnerships that are essential for the sustainability of the mitigation plan. See the **Bi-Annual Implementation Report** discussed below which will be a valuable tool for the Planning Team to measure the success of the Hazard Mitigation Plan. The focus of the MJHMP Bi-Annual meetings will be on the progress and changes to the Mitigation Action Items.

Q&A | ELEMENT D: PLAN MAINTENANCE | D3-a.

Q: Does the plan describe each community will follow to integrate the ideas, information and strategy of the mitigation plan into other planning mechanisms? (Requirement 44 CFR § 201.6(c)(4)(ii))
A: See **Integration into other Planning Mechanisms** below.

Integration into other Planning Mechanisms

The District addresses statewide planning goals and legislative requirements through the General Fund, Capital Improvement Projects, Urban Water Management Plan, Strategic Plan and Grants. The Mitigation Plan provides a series of recommendations - many of which are closely related to the goals and objectives of existing planning programs (aka planning mechanisms). The District will implement recommended mitigation action items through existing programs and procedures, as possible.

The District is responsible for adhering to the State of California's Building and Safety Codes; however in accordance with Section 53091 (d)(e) the District is exempt from having to comply with county and/or city building and zoning ordinances when constructing facilities for the production, generation, storage, treatment, or transmission of water.. In addition, the District may 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 strategic and other budget documents. During the bi-annual reviews, the planning teams will work with the departments to identify areas that the Mitigation Plan action items are consistent with the strategic and budget documents to ensure the Mitigation Plan goals and action items are implemented in a timely fashion.

Specifically, the Planning Team will utilize the updates of the following documents to implement the Mitigation Plan:

- ✓ Risk Assessment, District Profile, Planning Process (stakeholders) – Emergency Response Plan, Risk and Resilience Assessment, Urban Water Management Plan, Strategic Plan, etc.
- ✓ Mitigation Actions Matrix – General Fund, Capital Improvement Projects, Urban Water Management Plan, Strategic Plan, Grants

Bi-Annual Implementation Report

The Bi-Annual Implementation Matrix is the same as the Mitigation Actions Matrix but with a column added to track the bi-annual status of each action item. Upon approval and adoption of the Plan, the Bi-Annual Implementation Reports will be added to the Plan's **Attachments**. Following is a view of the Bi-Annual Implementation Matrix:

Insert here once plan is finalized and approved.

An equally important part of the monitoring process is the need to maintain a strategic planning process which needs to include funding and organizational support. In that light, at least one year in advance of the FEMA-mandated 5-year submission of an update, the Local Mitigation Officer will convene the Planning Team (as well as any other departments with responsibilities on the Mitigation Actions Matrix) to discuss funding and timing of the update planning process. On the fifth year of the planning cycles, the Planning Team will broaden its scope to include discussions and research on all of the sections within the Plan with particular attention given to goal achievement and public participation.

Economic Analysis of Mitigation Projects

FEMA's approach to identifying 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.

Given federal funding, 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.

The "benefit", "cost", and overall "priority" of each mitigation action item was included in the Mitigation Actions Matrix located in Part III: Mitigation Strategies. A more technical assessment will be required in the event grant funding is pursued through the Hazard Mitigation Grant Program. FEMA Benefit-Cost Analysis Guidelines are discussed below.

FEMA Benefit-Cost Analysis Guidelines

The Stafford Act authorizes the President to establish a program to provide technical and financial assistance to state and local governments to assist in the implementation of hazard mitigation measures that are cost effective and designed to substantially reduce injuries, loss of life, hardship, or the risk of future damage and destruction of property. To evaluate proposed hazard mitigation projects prior to funding FEMA requires a Benefit-Cost Analysis (BCA) to validate cost effectiveness. BCA is the method by which the future benefits of a mitigation project are estimated and compared to its cost. The end result is a benefit-cost ratio (BCR), which is derived from a project's total net benefits divided by its total project cost. The BCR is a numerical expression of the cost effectiveness of a project. A project is considered to be cost effective when the BCR is 1.0 or greater, indicating the benefits of a prospective hazard mitigation project are sufficient to justify the costs.

Although the preparation of a BCA is a technical process, FEMA has developed software, written materials, and training to support the effort and assist with estimating the expected future benefits over the useful life of a retrofit project. It is imperative to conduct a BCA early in the project development process to ensure the likelihood of meeting the cost-effective eligibility requirement in the Stafford Act.

The BCA program consists of guidelines, methodologies, and software modules for a range of major natural hazards including:

- ✓ Flood (Riverine, Coastal Zone A, Coastal Zone V)
- ✓ Hurricane Wind
- ✓ Hurricane Safe Room
- ✓ Damage-Frequency Assessment
- ✓ Tornado Safe Room
- ✓ Earthquake
- ✓ Wildfire

The BCA program provides up to date program data, up to date default and standard values, user manuals and training. Overall, the program makes it easier for users and evaluators to conduct and review BCAs and to address multiple buildings and hazards in a single BCA module run.

Evaluating and Updating the Plan

Q&A | ELEMENT D: PLAN MAINTENANCE | D2-b.

Q: Does the plan describe the process that will be followed to evaluate the plan for effectiveness? This process must identify the criteria that will be used to evaluate the information in the plan, along with when this process will occur and who will be responsible. (Requirement 44 CFR § 201.6(c)(4)(i))
A: See **Evaluation** below.

Evaluation

As discussed at the beginning of this section, the representatives from the coordinating agencies (as identified in the Mitigation Actions Matrix) will meet twice a year to gather status updates on the mitigation action items. During the second of those bi-annual implementation meetings each year, the Local Mitigation Officer will lead a discussion on the success (or failure) of the Mitigation Plan to be effective and to meet the plan goals. Examples of measuring the plan's effective will include assessing effectiveness include evaluating whether new hazards have emerged, whether vulnerability has changed, and whether stated mitigation strategies are still appropriate for the District's circumstances. The plan goals are defined in the beginning of the Mitigation Strategies Section and each of the mitigation action items is aligned with a goal or goals.

The results of that discussion will be added to the Evaluation portion of the Bi-Annual Implementation Report and inclusion in the 5-year update to the Plan. Efforts will be made immediately by the Local Mitigation Officer to address any failing or failed plan goals.

Q&A | ELEMENT D: PLAN MAINTENANCE | D2-c.

Q: Does the plan describe the process that will be followed to update the plan, along with when this process will occur and who will be responsible for the process? (Requirement 44 CFR § 201.6(c)(4)(i))
A: See **Formal Update Process** below.

Formal Update Process

As identified above, the Mitigation Action Items will be monitored for status on a bi-annual basis as well as an evaluation of the Plan's goals. The Local Mitigation Officer or designee will be responsible for contacting the coordinating agency members and organizing the bi-annual meetings which will take place based on the month of the Plan's approval. Planning Team members will also be responsible for participating in the formal update to the Plan every fifth year of the planning cycle. In the event the District desires to seek grant funding for the update, the application process should begin 2 years in advance of the plan's expiration. Even without grant funding, the planning process should begin at least 1.5 years ahead of the plan's expiration.

The Planning Team will begin the update process with a review the goals and mitigation action items to determine their relevance to changing situations within the District 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 the Plan's **Risk Assessment** portion of the Plan to determine if this information should be updated or modified, given any new available data. The **lead department/position responsible** for the various action items will report on the status of their projects, including the success of various implementation processes, difficulties encountered, success of coordination efforts, and which strategies should be revised. Amending will be made to the Mitigation Actions Matrix and other sections in the Plan as deemed necessary by the Planning Team.

Q&A | ELEMENT D: PLAN MAINTENANCE | D1-a.
Q: Does the plan describe how communities will continue to seek future public participation after the plan has been approved? (Requirement 44 CFR § 201.6(c)(4)(iii)) **A:** See **Continued Public Involvement** below.

Continued Public Involvement

The District is dedicated to involving the public directly in the continual review and updates to the Mitigation Plan. Copies of the plan will be made available at District Headquarters and on the District's website. The existence and location of these copies will be publicized in the District's bill and on the website, including social media channels: Facebook, Twitter, Instagram, and LinkedIn. This website will also contain an email address and phone number where customers can direct their comments and concerns. At the discretion of the Local Mitigation Officer, a public meeting may be held after the Bi-Annual Implementation Meeting. The meeting would provide the public a forum in which interested individuals and/or agencies could express their concerns, opinions, or ideas about the plan.

The Local Mitigation Officer will be responsible for using the District's resources to publicize any public meetings and always free to maintain public involvement through the public access channel, website, and newspapers.

Plan Review, Adoption and Approval

The MJHMP Base Plan and Annexes are required to go through a formal review with Cal OES and FEMA. Once the Planning Team has reviewed the First Draft Plan and revisions made, the Second Draft Plan will be made available to the general public and external agencies. The plan will be posted and notices distributed advertising the plan's available for input. See **Planning Process** for details.

Comments gathered on the Second Draft Plan will be incorporated into the Third Draft Plan which will be submitted to Cal OES along with a completed FEMA Local Mitigation Plan Review Tool (PRT). In the event changes are required, Cal OES will update the Plan Review Tool and any mandated changes will be incorporated into the Fourth Draft Plan. Once Cal OES deems the plan compliant with the mitigation planning regulations, the document will be forwarded to FEMA for a final review. Upon acceptance by FEMA, an Approvable Pending Adoption notice will be sent to the MJHMP Planning Team Chair. The notice will apply to the Base Plan and Annexes. First, the Chair will be requested to submit the Base Plan Final Draft to the RWD Board of Directors for adoption. Once proof of adoption is forwarded to FEMA, a Letter of Approval will be issued. The Letter of Approval will be entered into the Final Base Plan.

Next, the other participating agencies will submit the FEMA-approved Base Plan and their own Annex to their decision making body for an adoption. The Chair will facilitate sending proof of adoption to FEMA. Upon receipt, FEMA will issue a Letter of Approval for the Annex. The Letter of Approval will be added to the Final Annex.

Q&A | ELEMENT F: PLAN ADOPTION | F1-a.
Q: Does the participant include documentation of adoption? (Requirement 44 CFR § 201.6(c)(5)) **A:** See **Plan Adoption Process** below.

RWD Plan Adoption Process

Adoption of the plan by the local governing body demonstrates the District's commitment to meeting mitigation goals and objectives. Governing body approval legitimizes the plan and authorizes responsible agencies to execute their responsibilities.

The Third Draft Plan was submitted to Cal OES and FEMA for review and approval. FEMA issued an Approvable Pending Adoption notice on _____ requiring the adoption of the Plan by the Board of Directors. The adoption resolution was submitted to FEMA along with a request for a FEMA Letter of Approval.

In preparation for the public meeting with the Board, the Planning Team posted the Third Draft Base Plan on the District's website. Notification of the Plan's availability was also distributed via the mediums utilized during the community outreach phase. Also, a staff report will be prepared including an overview of the Planning Process, Risk Assessment, Mitigation Goals, and Mitigation Actions. The staff presentation will conclude with a summary of the input received during the public review of the document. The meeting participants will be encouraged to present their views and make suggestions on possible mitigation actions.

The Board of Directors heard the item on _____. The Board voted to _____ (adopt) the MJHMP- Base Plan. The resolution of adoption by the Board is below:

Insert resolution

Plan Approval

Upon adoption by the Board of Directors, the signed resolution was forwarded to FEMA. The FEMA Letter of Approval was issued on _____. FEMA issued a Letter of Approval on _____and is below:

Insert letter of approval

Attachments

Web Posting and Notifications

Secondary Stakeholders Involvement

Date Invited to Provide Input or Input Gathered	Agency Represented, Name, Position Title	Information Received and Incorporated
	Water Agencies	
	Palm Ranch Irrigation District, Peter Tuculet, General Manager	
	California Water Service Company - Antelope Valley District, Jon Yasin, District Manager	
	White Fence Farms Mutual Water Company, Mark Horwedel, General Manager	
	Sunnyside Farms Mutual Water Company, Jeanne Miller, Operator	
	Antelope Park Mutual Water Company, Elizabeth Green, President	
	Littlerock Creek Irrigation District, James Chaisson, General Manager	
	Santa Clarita Valley Water Agency, Michael Alvord, Director of Operations & Maintenance	
	La Canada Irrigation District, Justin Bailey, Assistant General Manager	
	Valley Water Company, Bob Fan, General Manager	
	City of Glendale Water & Power, Mark Young, General Manager	
	Burbank Water & Power, Dawn Roth Lindell, General Manager	
	City of Pasadena Water & Power Department, Sidney Jackson, General Manager	
	Sierra Madre Water & Sewer, Arnulfo Yanez, Director Public Works	
	CalAm Water San Marino, Kevin Tilden, President	
	CalAm Water East Pasadena, Kevin Tilden, President	
	City of Alhambra Utility Department, Dennis Ahlen, Deputy Director of Utilities	
	Golden State Water Company - San Gabriel, Benjamin Lewis, General Manager Foothill District	
	City of El Monte Water Department, Alma Martinez, City Manager	
	City of Arcadia Water & Sewer, Paul Cranmer, Director of Public Works Services	
	Valley View Mutual Water Company, Jan Barendregt, Chief Executive Officer	
	Azusa Light & Water, Tikan Singh, General Manager	
	South West Water Company, Craig Gott, President, Suburban Water Systems	
	Covina Water Division, Andy Bullington, Director of Public Works	
	City of Pomona Water & Power, Rene Guerrero, Public Works Director	
	City of Industry Waterworks, Joshua Nelson, City Manager	

Date Invited to Provide Input or Input Gathered	Agency Represented, Name, Position Title	Information Received and Incorporated
	La Habra Heights County Water District, Michael Gualtieri, General Manager	
	City of Santa Fe Springs Water Utility Authority, Rene Bobadilla, City Manager	
	Liberty Utilities Bellflower Norwalk, Gabriel Gomez, Operations Supervisor - Production	
	City of Paramount Water Services, John Moreno, City Manager	
	Long Beach Water, Tai Tseng, Director of Operations	
	City of Cerritos Water Department, Dario Simoes, Acting Director of Public Works/City Engineer	
	CalAm Water Commerce, Kevin Tilden, President	
	City of Montebello Public Works, Danilo Batson, Director Public Works	
	Cities	
	City of Bellflower, Len Gorecki, Director of Public Works	
	City of La Puente, John Dimario, Director of Development Services	
	City of Industry, Sam Pedroza, Assistant City Manager	
	City of Pico Rivera, Noe Negrete, Director of Public Works	
	City of San Gabriel, Mark Lazzaretto, City Manager	
	City of San Gabriel, Captain Antonio Negrete, Fire Department PIO	
	City of San Marino, Philippe Eskandar, City Manager	
	City of Alhambra, Jessica Binnquist, City Manager	
	City of Alhambra, Ron Dalessandro, Fire Department Communications Supervisor	
	Temple City, Brian Ariizumi, Public Safety Supervisor	
	City of Montebello, Darrol Hunt, PIO	
	City of Glendora, Greg Morton, PIO	
	City of La Verne, Richard J. Martinez, Utilities Manager	
	City of San Dimas, Anissa Livas, PIO	
	City of Claremont, Shelley Desautels, City Clerk	
	City of Pomona, Mark Gluba, PIO	
	City of West Covina, Lisa Sherrick, Assistant City Clerk	
	City of Walnut, Tom Weiner, City Manager	
	City of Diamond Bar, Marsha Roa, Public Information Manager	
	Target Agencies	
	Los Angeles Regional Food Bank, Michael Flood, Executive Director	
	Salvation Army, Nick Nguyen, Emergency Disaster Services Director	
	Buddhist Tzu Chi Foundation, Curtis Hsing, Emergency Disaster Services Manager	
	Volunteers of America, Andrew Grundig, Safety Coordinator II	
	211 LA County, Maribel Marin, Executive Director	

Date Invited to Provide Input or Input Gathered	Agency Represented, Name, Position Title	Information Received and Incorporated
	American Red Cross, Bee Kong, Regional Volunteer Services Officer	
	United American Indian Involvement, Eric Honanie, Director of Operations	
	Church of Scientology, Janet Weiland, CSDR Greater LA/So. CA Regional Office	
	Los Angeles Region Community Recovery Organization (LARCRO), Jennifer Campbell, Executive Director	
	Habitat for Humanity, Jessica Lawson, Disaster Recovery Program Manager	
	Service Center for Independent Life, Larry Grable, Executive Director	
	BAPS Charities, Mehul Patel, Volunteer	
	Buddhist Tzu Chi Foundation, Norman Yang, Emergency Disaster Services Program Associate	
	West Valley Counseling Center, Dr Sharon Burnett, Founder, Executive Director	
	Christian Church – Disciples of Christ, Rev. Richie Sanchez, Regional Minister and President	
	Didi Hirsch Mental Health Foundation, Lynn Morris, Chief Executive Officer	
	Neighborhood Legal Services LA, Yvonne Mariajimenez, President and CEO	
	California Southern Baptist Convention Disaster Response Ministries, Laura Johnson, CSBCDR Operations Coordinator	
	North Los Angeles County Regional Center, Ruth Janka, Executive Director	
	Eastern Los Angeles Regional Center, Gina Esparza, Emergency Management Officer	
	San Gabriel Pomona Regional Center, Jesse Weller, Executive Director	
	Lanterman Regional Center, Melinda Sullivan, Executive Director	
	Jewish Family Service of Los Angeles, Nancy Volpert, Senior Director of Public Policy & Community Engagement	
	Thai Community Development Center, Chancee Martorell, Executive Director	
	Catholic Charities, Shaun McCarty, Program Manager, Disaster Recovery Program	
	California Community Foundation, Antonia Hernández, President and CEO	
	Church World Service, Matthew Stevens, Director of Congregational Campaign	
	United Way Greater Los Angeles, Elise Buik, President and CEO	
	Federal Emergency Management Agency (FEMA), Charles Craig, Voluntary Agency Liaison	
	City of Los Angeles Emergency Management Department, Carol Parks, General Manager	

Date Invited to Provide Input or Input Gathered	Agency Represented, Name, Position Title	Information Received and Incorporated
	Los Angeles County Office of Emergency Management, Jeanne O'Donnell, Program Manager	
	Los Angeles County Public Social Services, John Cvjetkovic, Administrative Services Manager II	
	Los Angeles County Department of Health Services, Coral Itzcalli, PIO	
	Los Angeles County Department of Mental Health, Laura Relph, Sr. Disaster Services Analyst	
	Los Angeles County Department of Public Works, Loni Eazell, Disaster Services Specialist	
	Los Angeles County Department of Public Works, Steven Frasher, PIO	
	Los Angeles County Department of Aging and Disabilities, Nikolette Orlandou, PIO	
	Los Angeles County Department of Military & Veteran Affairs, Kathleen Piché, PIO	
	Los Angeles County Department of Public Health, Stella Fogleman, Director, Emergency Preparedness and Response	
	Emergency Network of Los Angeles, Yosef Jalil, Program Director	
	Los Angeles County Fire Department, Battalion Chief Chad Sourbeer, PIO	
	Los Angeles County Fire Department, Mario Tresierras, Division Chief Health HazMat	
	Los Angeles County Sheriff's Department, Captain Lorena Rodriguez, PIO	
	California Highway Patrol, Sergeant Alejandro Rubio, PIO, Southern Division	
	Los Angeles Unified School District, Jill Barnes, Executive Emergency Strategist, Office of Emergency Services	
	Disaster Management Area A, Christine Parra, Disaster Management Area Coordinator	
	Disaster Management Area B, Debbie Pedrazzoli, Disaster Management Area Coordinator	
	Disaster Management Area C, Soraya Sutherlin, Disaster Management Area Coordinator	
	Disaster Management Area D, Diana Manzano-Garcia, Disaster Management Area Coordinator	
	Disaster Management Area E, David Ashman, Disaster Management Area Coordinator	
	Disaster Management Area F, Francisco Soto, Disaster Management Area Coordinator	
	Disaster Management Area G, Brandy Villanueva, Disaster Management Area Coordinator	
	Disaster Management Area H, Darryl Pedigo, Disaster Management Area Coordinator	
	Board of Supervisors - 1st District, Kimberly Ortega, Acting Communications Deputy	

Date Invited to Provide Input or Input Gathered	Agency Represented, Name, Position Title	Information Received and Incorporated
	Board of Supervisors - 2nd District, Lenee Richards, Chief Communications Officer	
	Board of Supervisors - 3rd District, Constance Farrell, Director of Communications	
	Board of Supervisors - 4th District, Liz Odendahl, Press Deputy	
	Board of Supervisors - 5th District, Helen Chavez, Director of Communications	

External Agencies Letter of Invitation

External agencies listed above were invited via email and provided with an electronic link to the District's website posting of the Second Draft Base Plan. Following is the email distributed to the external agencies. A pdf of the Plan was attached.

Planning Team Agenda: Meeting #1 – September 14, 2022

Agenda

Public Water Agencies
Multi-Jurisdictional Hazard Mitigation Plan

Planning Team Meeting #1 (Virtual)

September 14, 2022

1. **Examine the purpose of hazard mitigation.**
2. **Discuss the concepts and terms related to hazard mitigation planning.**
3. **Review the project schedule and public involvement during the plan writing phase.**
4. **Discuss results of the Initial Risk Assessment.**
5. **Gather District Profiles Data**
    a. **History, Geography, Land Use, Demographics, CIP**

Planning Team Agenda: Meeting #2 – September 28, 2022

Agenda

Public Water Agencies Group
Multi-Jurisdictional Hazard Mitigation Plan

Planning Team Meeting #2 (Virtual)

September 28, 2022

1. Introduce Calculated Priority Risk Index tool. Announce One-on-One Mentoring sessions with Emergency Planning Consultants and each of the participating agencies.

2. Review HAZUS maps for each of the 11 participating agencies.

3. Review examples of hazard mitigation activities.

4. Review sample Mitigation Actions Matrices from Jurupa Community Services District and Cucamonga Valley Water District.

5. Discuss shift from a PWAG Base Plan to a Rowland Water District Base Plan. (RWD is the holder of the project-funding grant.

One-on-One Mentoring Sessions – November 2-12, 2022

Agenda

Rowland Water District
Multi-Jurisdictional Hazard Mitigation Plan

One-on-One Mentoring Sessions (Virtual)

November 2-12, 2022

1. **Review Hazards Identified in Los Angeles County All-Hazards Mitigation Plan along with hazards agreed to by the MJHMP Planning Team.**
2. **Based on MJHMP hazard list, identify hazards impacting the participating agency.**
3. **Examine agency's MyHazards Map.**
4. **Review and complete CPRI Tool.**
5. **Review process for completing Mitigation Actions Matrix.**

Collaborative Meeting – December 6, 2022

Agenda

Rowland Water District
Multi-Jurisdictional Hazard Mitigation Plan

Collaborative Meeting Among Participating Agencies (Live/Virtual)

December 6, 2022

1. **Recap Hazard Identification process and selected hazards: Drought, Dam Inundation, Earthquake, Flood, Wildfire, Utility Related.**
2. **Field questions about eligibility of mitigation action ideas for federal grant funding.**
3. **Discuss potential collaborative hazard mitigation projects.**

Planning Team Agenda: Meeting #3 – January 19, 2023

Agenda

Rowland Water District
Multi-Jurisdictional Hazard Mitigation Plan

Planning Team Meeting #3 (Live)

January 19, 2023

1. **Share PowerPoint on the FEMA regulations going into effect on April 19, 2023. Discuss impact on the MJHMP.**
2. **Review updated Mitigation Action Matrix based on first Planning Team meeting and One-on-One Mentoring Sessions.**
3. **Develop additional mitigation action items.**
4. **Continue to gather and develop mitigation action item information including:**
    a. **Comments: Cost Estimates (not required), Ongoing**
    b. **Ratings: Priority, Benefit, Cost**
    c. **Funding Source and Planning Mechanism**
    d. **Impact to Buildings/Infrastructure**
    e. **Lead Department/Position**
    f. **Timeline**
    g. **Plan Goals Accomplished**
5. **Introduce Capability Assessment and Critical Facilities Assets List tools.**

One-on-One Mentoring Sessions – February through May 2023

Agenda

Rowland Water District
Multi-Jurisdictional Hazard Mitigation Plan

One-on-One Mentoring Sessions (Virtual)

February through May 2023

1. **Review draft Capability Assessment**
2. **Review draft Critical Facilities Assets List**
3. **Answer questions about planning process and next steps**

Planning Team Agenda: Meeting #4 – June 28, 2023

Agenda

Rowland Water District
Multi-Jurisdictional Hazard Mitigation Plan

Planning Team Meeting #4 (Live)

June 28, 2023

I. **Note: distributed First Draft Plans in advance to the MJHMP Planning Team.**
   a. **Provide Plan overview**
   b. **Gather missing information and answer questions**
   c. **Discuss strategy for community outreach, formal plan review, adoption, approval**
      i. **Discuss order of gathering input to the Base Plan First Draft and Annex First Drafts**
         1. **MJHMP Planning Team members**
         2. **Agency-specific Planning Team members**
         3. **General Public and External Agencies**
            a. **Public (notice of plan availability)**
            b. **Note: new FEMA outreach requirements: underserved communities and socially vulnerable populations – recommend using city and county government Housing Element contact resources**
            c. **External Agencies (Community Lifelines, Adjoining Jurisdictions)**