JOSHUA BASIN WATER DISTRICT

Proudly providing water from an ancient source…well into the future

REGULAR MEETING AGENDA OF THE BOARD OF DIRECTORS
Wednesday, February 7, at 5:30 p.m.

MEETINGS ARE HELD IN PERSON AT 61750 CHOLLITA RD., JOSHUA TREE, CA 92252

REMOTE ACCESS IS AVAILABLE FOR THE CONVENIENCE OF THE PUBLIC

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MEETING ID: 872 8707 9239
PASSCODE: 61750

MISSION, VISION, AND VALUES

Mission Statement

To provide, protect, and maintain Joshua Tree's water - our vital community resource.

Vision Statement

To achieve excellence in all District endeavors.

Values

The community of Joshua Tree has entrusted the Board of Directors and employees of Joshua Basin Water District with its most valuable natural resource, its groundwater. As stewards of the community water supply, we oversee this critical natural resource to ensure current and future water reliability. Dedicated to this purpose, we embrace these important values:

- **Integrity** – To consistently earn our customers' trust by prioritizing the needs of the community… doing the right thing for the right reason.
- **Transparency** – To openly and honestly share information about our operations with the public.
- **Respect** – To treat the residents of Joshua Tree, and all those contacted in the course of business, with high esteem and regard.
- **Fiscal Responsibility** – To manage all resources as if they were our own, whether revenues, assets, or water supply, in a conscientious and appropriate manner.
- **Accountability** – To take responsibility for our decisions and actions in managing this essential resource.

1. CALL TO ORDER / PLEDGE OF ALLEGIANCE

2. DETERMINATION OF A QUORUM

Consideration of Board Member requests for remote participation.

3. APPROVAL OF AGENDA

4. PUBLIC COMMENT

This designated time is for members of the public to provide comments on any District related matter, whether appearing on the agenda or not. Under the provisions of the Brown Act, the Board is prohibited from taking action on items not listed on the agenda. At the discretion of the Board President, comments on a particular agenda item may be deferred until that item is heard. Please state your name and limit your comments to 3 minutes.

5. CONSENT CALENDAR

Consent calendar items are expected to be routine and non-controversial, to be acted upon by the Board at one time, without discussion. If a board member would like an item to be handled separately, it will be removed from the Consent Agenda for separate action.

A. DRAFT MINUTES – 01.17.2024

6. ITEM(S) PULLED FROM CONSENT CALENDAR FOR DISCUSSION

7. PROJECT LIST UPDATE

This item is for informational purposes only. Staff may provide updates to the Board on any projects listed. Board members may ask questions and seek clarification on any projects listed. If board action is necessary on any project, it will be scheduled as a future agenda item.

8. PRESENTATIONS

For informational purposes only. No action is to be taken.

A. PUBLIC OUTREACH REPORT

Public Outreach Consultant Kathleen Radnich will provide a report on outreach activities.

9. WORKSHOP

A. LOCAL HAZARD MITIGATION PLAN WORKSHOP

PRESENTED BY: SARAH JOHNSON, GENERAL MANAGER, AND GARY STURDIVAN, HAZARD MITIGATION CONSULTANT

RECEIVE PRESENTATION, REVIEW, AND PROVIDE INPUT. NO ACTION IS TO BE TAKEN.

10. REPORTS AND COMMENTS

For informational purposes only on subjects not covered by the agenda. No action is to be taken. The Board may provide staff with requests for future agenda items.

A. DIRECTORS REPORTS

B. GENERAL MANAGER REPORT

11. CLOSED SESSION - Pursuant to Government Code Section 54957 (b)(1) Public Performance Evaluation of the General Manager.

OPEN SESSION - Report Out on General Manager Performance Evaluation

12. ADJOURNMENT

CALENDAR REMINDER - FUTURE DIRECTOR MEETINGS	DATE	TIME	ATTENDEE(S)
MWA - BOARD MEETING	02.08.24	9:30 AM	FICK
JBWD - FINANCE COMMITTEE	02.14.24	9:00 AM	FLOEN/FICK
JBWD - WRO COMMITTEE	02.14.24	11:00 AM	DOOLITTLE/JARLSBERG
JBWD - MANAGER MEETUPS	02.14.24	12:00 PM	FLOEN/DOOLITTLE
JBWD - BOARD MEETING	02.21.24	5:30 PM	ALL

MEETING INFORMATION

The public is invited to comment on any item on the agenda during the discussion of that item.

Availability of agenda materials: Materials related to any item on this Agenda submitted to the District Board of Directors or Committee Members after distribution of the agenda packet are available for public inspection at the District's office, 61750 Chollita Road, Joshua Tree, CA 92252, during normal business hours. All documents supporting this agenda are available on the District website www.jbwd.com, subject to the staff's availability to post the documents before the meeting.

Reasonable Accommodation: Any person with a disability who requires accommodation to view the agenda or to participate in the public comment portion of the Board meeting, should direct such requests to Lisa Thompson, Executive Assistant, at 760-366-8438. Please allow three business days for your request to be processed. Requests must be received at least seventy-two (72) hours before the scheduled meeting.

Disruptive Conduct: If any meeting of the District is willfully disrupted by a person or by a group of persons so as to render the orderly conduct of the meeting impossible, a meeting may be recessed or the person or persons willfully disrupting the meeting may be ordered to leave the meeting. Disruptive conduct includes addressing the Board or Committee without first being recognized, not addressing the subject before the Board or Committee, repetitively addressing the same subject, failing to relinquish the podium when requested to do so, or otherwise preventing the Board or Committee from conducting its meeting in an orderly manner. Your cooperation is appreciated.

MEETING MINUTES

REGULAR MEETING OF THE BOARD OF DIRECTORS
January 17, 2024, 5:30 PM

AGENDA ITEMS

1. **CALL TO ORDER**

   President Floen called the meeting to order at: 5: 30 p.m.

2. **DETERMINATION OF A QUORUM & ATTENDANCE**

   Board Members Present: President Floen, Vice President Doolittle, Director Jarlsberg, Director Short, Director Fick

   Staff Present: General Manager Johnson, Director of Finance Roman, Director of Administration Shook, Interim Director of Operation Nazario, Executive Assistant Thompson

   Consultant(s) Present: Kathleen Radnich, Public Outreach Consultant, Jeff Hoskinson, Legal Counsel

   Citizens Advisory Council Member(s) Present: Chairperson David Carrillo

3. **APPROVAL OF THE AGENDA**

   Director Doolittle made a motion to approve the agenda, seconded by Director Jarlsberg, and approved by the following vote.

1st / 2nd	Doolittle/ Jarlsberg
Ayes:	Floen, Doolittle, Jarlsberg, Short, and Fick
Noes:	None
Abstain:	None
Absent:	None

4. **PUBLIC COMMENT**

   None

5. **CONSENT CALENDAR**

   A. DRAFT MINUTES – 12.20.2023
   B. CHECK REGISTER - NOVEMBER 2023

   Director Jarlsberg made a motion to approve the consent calendar, seconded by Director Short, approved by the following vote.

1st/ 2nd	Jarlsberg / Short
Ayes:	Floen, Doolittle, Jarlsberg, Short, and Fick
Noes:	None
Abstain:	None
Absent:	None

6. ITEMS PULLED FROM CONSENT CALENDAR FOR DISCUSSION - None

7. PRESENTATIONS - For informational purposes only. No action was taken.

A. CUSTOMER SUPPORT SPECIALIST DEPARTMENT PRESENTATION
PRESENTED BY: DAVID SHOOK, DIRECTOR OF ADMINISTRATION

David Shook, Director of Administration, presented his staff report highlighting the performance of the Customer Support Specialist Department. Shook shared a presentation including statistics on the total number of water service applications processed, the newly created webform through DocuSign, the total number of phone calls received, the top five phone call subjects, the number of completed emails, the coverage during hours of operation, updating the lobby, and in-person visits.

Shook said only 7% of customer interactions were in-person, while 93% were through phone and email. Shook also mentioned that the District's newest Customer Support Specialist is bilingual in Spanish, which has been a great asset for the district with our Spanish-speaking customers. Additionally, Shook reported that the district received several 5-star Google reviews in 2023, which significantly boosted the district's Goole ratings.

B. RATE SCENARIO ANALYSIS
PRESENTED BY: ANNE ROMAN, DIRECTOR OF FINANCE

Anne Roman, the Director of Finance, delivered a presentation on the Rate Scenario Analysis to the board based on the rate study conducted by Bartle Wells Associates in 2023. Roman reminded the board that in February 2023, they had voted to adopt Rate Scenario A from the rate study, but ultimately implemented the lower rates of Scenario C. In December 2023, a financial analysis was conducted to review the cash balances, unrestricted LAIF balance, water revenues, and reserve funding targets. After analyzing the data, Roman recommended that the board remain with Rate Scenario C. Roman concluded her presentation by assuring the board that the district's finances would be monitored closely and that staff would inform them if there were any changes.

C. ACTION CALENDAR

D. DESIGN RFP FOR E-2-1 RESERVOIR REFURBISHMENT PROJECT
PRESENTED BY: JEREMIAH NAZARIO, INTERIM DIRECTOR OF OPERATIONS
RECOMMENDED ACTION: RECOMMEND THE BOARD APPROVE THE ARDURRA REQUEST FOR PROPOSAL AS PRESENTED

Jeremiah Nazario, Interim Director of Operations, presented the Request for Proposal for the refurbishment project of the E-2-1 reservoir to the board. The reservoir is located in the Northwest area of the district and serves 35 customers. It was constructed after the 1992 Landers earthquake and is currently facing structural integrity issues. Rehabilitation of the reservoir is overdue, and it is critical to meet modern engineering standards to ensure its longevity. Nazario stated that Ardurra Engineering firm was selected as the best candidate for the project due to their expertise in similar projects.

Director Short made a motion to approve the Ardurra Request for Proposal as presented, seconded by Director Jarlsberg, and approved by the following vote.

1st/ 2nd	Short/Jarlsberg
Ayes:	Floen, Doolittle, Jarlsberg, Short, and Fick
Noes:	None
Abstain:	None
Absent:	None

B. 1st FISCAL QUARTER ENDING 09/30/23 FINANCIAL REPORT
PRESENTED BY: ANNE ROMAN, DIRECTOR OF FINANCE
RECOMMENDED ACTION: RECEIVE REPORT, ASK QUESTIONS, AND APPROVE

Anne Roman, Director of Finance, presented the 1st Fiscal Quarter Ending 09/30/23 financial report to the board in detail. Roman explained that the report contains limited transactions because the report only contains data from the 1st quarter of the fiscal year. Roman pointed out that this report only included operating expenses, not capital costs. Roman specified that capital reporting is more labor-intensive.

Director Fick made a motion to approve the 1st Fiscal Quarter Ending 09/30/23 Financial Report, seconded by Vice President Doolittle, and approved by the following vote.

1st/ 2nd	Fick / Doolittle
Ayes:	Floen, Doolittle, Jarlsberg, Short, and Fick
Noes:	None
Abstain:	None
Absent:	None

A. REPORTS AND COMMENTS

President Floen

- President Floen attended the Finance Committee on January 10, 2024
- Floen mentioned at the MWA meeting on January 11, 2024, the cost of an acre-foot of recharge water was discussed.

Vice President Doolittle

- Vice President Doolittle attended the Finance & WRO Committees on January 10, 2024.
- Doolittle was pleased to find a Facebook QR code in the lobby for customers to use.
- Doolittle asked if there were any upcoming USGS presentations at the District and expressed interest in their collected data.
- Doolittle expressed concern about the potential future impact of microplastics.

Director Jarlsberg

- Director Jarlsberg is planning on attending the ACWA Region 9 Tour on January 30, 2024, in Palm Springs.
- Jarlsberg attended the MWA board meeting remotely on January 11, 2024.
- Jarlsberg toured the E-2-1 reservoir with President Floen and met local customers. Jarlsberg emphasized the importance of board interactions with customers.

Director Short

- None

Director Fick

- Director Fick expressed that he was pleased to see that the Class investment was being explored by district staff and hoped that there would be a presentation to the board.
- Fick and Vice President Doolittle will meet with US Water Alliance on Monday, January 22 in the boardroom to learn more about the organization and its offerings.

General Manager Report

Johnson reported on the following:

- Johnson noted that the district began banking 500-acre feet of water for Mojave Water Agency (MWA) and is hoping to continue into February.
- Johnson mentioned that the district is currently contracted for water banking with MWA. The contract provides JBWD with a 15% leave-behind benefit (shrinkage factor). MWA has expressed renegotiation of the banking contract as the 15% leave behind is quite large. Johnson will be meeting with MWA to discuss this concern next week.
- Johnson shared that the new website will be deployed on January 30, 2024.
- Johnson highlighted that the district is responsible for managing in excess of 70 mandates. Almost all of these are unfunded mandates requiring significant effort and staff time.
    - In December, the district completed the new Annual Water Use (also called Water Use Objective) report, meeting the Dec 31st deadline. However, staff was not provided much time to complete the report due to the short notice period provided by regulators.
    - Johnson informed that two new mandates are coming up in 2024.
        - Annual inventory report due on March 31st to be submitted to the Division of Drinking Water.
        - A clean truck mandate report to CARB, which will come with a new fee.
    - The CIRP crew will begin the Lead and Copper Rule Revision (LLCR) mandated by the state, which involves verifying pipe on the customer side. The LLCR is another unfunded mandate due in October 2024.
- Johnson discussed the district's membership with Community Water Systems Alliance (CWSA), which is a coalition that helps small agencies with legislative concerns. Johnson shared that she was contacted by Tim Worley from the CWSA about an opportunity to speak to legislators at the Sacramento Capital about our disadvantaged community and the upcoming Chromium 6 concern. Johnson went to the Sacramento Capitol and met with several assembly members and senators to discuss these issues on Jan 16th. Johnson believes a positive impression was made on Greg Wallace's Capital Director and is hopeful our voices are heard.

B. ADJOURNMENT

On motion by Director Short, seconded by President Floen and approved by the Board, the meeting was adjourned at: 7:29 p.m.

Respectfully submitted,

_____

Sarah Johnson, General Manager & Board Secretary

JBWD PROJECT LIST
FY 23/24

DEPT	PROJECT # (if applicable)	TYPE	FUND SOURCE	PROJECT NAME	PROJECT DESCRIPTION/INFORMATION	STRAT PLAN #	BUDGET FUNDED	FY BUDGET	BUDGET ADJUST	STATUS	PROJECT MANAGER
ADMIN	N/A	OP EXP	OP EXP	WEBSITE REDESIGN	PROJECT COMPLETE	4.8.1 & 5.1.5	NORMAL OPS	N/A		COMPLETE	SARAH/ DAVID
CIRP	CP #A22209	CAPITAL	CAPITAL	TILFORD PH2 DESIGN/SURVEY	PROJECT COMPLETE	1.2.6	YES	80,000		COMPLETE	BRANDON
OPS	CP #A23209	CAPITAL	EQUIP & TECH	2-WAY RADIOS - COMMUNICATION & EMERGENCY MNGT	PROJECT COMPLETE	1.1.2.2	YES	35,000		COMPLETE	JEREMIAH
OPS	CP #A23204	CAPITAL	EQUIP & TECH	TRUCKS - 3 TOYOTA TACOMA, 1 TUNDRA, & 1 DODGE 2500 RECEIVED AND IN USE	PROJECT COMPLETE	1.3.5	YES	240,000		COMPLETE	JEREMIAH
OPS	CP #A23201	CAPITAL	EQUIP & TECH	VACUUM/EXCAVATOR	PROJECT COMPLETE	1.3.6	YES	95,000		COMPLETE	JEREMIAH
OPS	CP #A23208	CAPITAL	EQUIP & TECH	TIRE CHANGER REPLACEMENT	PROJECT COMPLETE	1.3.7	YES	12,000		COMPLETE	JEREMIAH
OPS	CP #A23202	CAPITAL	CAPITAL	CONCRETE MIXER	PROJECT COMPLETE	1.3.7	YES	8,000		COMPLETE	JEREMIAH
ADMIN	CP #A23210	CAPITAL	EQUIP & TECH	FILE SERVER REPLACEMENT	PROJECT COMPLETE	1.1	YES	15,000		COMPLETE 01/26/2023	DAVID
CIRP	CP #A22211	CAPITAL	CAPITAL	TILFORD PH2 INSTALL	PROJECT COMPLETE	1.2.7	YES	650,000		COMPLETE 10/12/2023	BRANDON
PRODUCTION	N/A	OP EXP	OP EXP	WATER RECHARGE PURCHASE - ACTUAL PURCHASE 1062 AF, SCHEDULED TO CONCLUDE APPROX. CALENDAR YR END	PROJECT COMPLETE	1	YES	685,300		COMPLETE 12/22/2023	JEREMIAH
ADMIN	#E23003	OP EXPENSE	REPORTS & STUDIES	2023 HAZARD MITIGATION PLAN	ENGAGE WITH STURDIVAN TO RENEW HAZARD MITIGATION PLAN	4.7.2	YES	38,000		IN PROGRESS	SARAH
ADMIN	N/A	OP EXPENSE	OP EXPENSE	NEW EMERGENCY SUPPLIES	PURCHASE SUPPLIES TO REPLENISH EMERGENCY SUPPLIES (TENT, FOOD, ETC.)	4.7.4	YES	10,000		IN PROGRESS	SARAH
ADMIN	#E23002	OP EXPENSE	REPORTS & STUDIES	STRATEGIC PLAN	RPF CURRENTLY BEING DRAFTED	2.12.3	YES	50,000		IN PROGRESS	SARAH
ADMIN	CP #A22219	CAPITAL	CAPITAL	EXTERIOR BLDG REFRESH	MAINTENANCE TO THE EXTERIOR OF ADMIN BUILDING INCLUDING PAINT, SIGNAGE, AND POSSIBLE FLOOD	1.1.3	YES	50,000		IN PROGRESS	DAVID
ADMIN	N/A	OP EXP	OP EXP	BILL REDESIGN	MODERNIZE BILL DESIGN	4.4.2	NORMAL OPS	N/A		IN PROGRESS	SARAH/ DAVID

JBWD PROJECT LIST
FY 23/24

DEPT	PROJECT # (if applicable)	TYPE	FUND SOURCE	PROJECT NAME	PROJECT DESCRIPTION/INFORMATION	STRAT PLAN #	BUDGET FUNDED	FY BUDGET	BUDGET ADJUST	STATUS	PROJECT MANAGER
CIRP	CP #A22227	CAPITAL	CAPITAL	BELMONT DESIGN/SURVEY	DESIGN COMPLETE SURVEY SCHEDULED FOR EARLY SUMMER	1.2.8	YES	150,000		IN PROGRESS	BRANDON
CIRP	CP #A23203	CAPITAL	CAPITAL	BELMONT PIPELINE (INVENTORY PRE-ORDER)	INVENTORY PRE-ORDER COMPLETE, MOST MATERIALS HAVE BEEN RECEIVED	1.2.8	YES	500,000		IN PROGRESS	BRANDON
FINANCE	N/A	OP EXPENSE	OP EXPENSE	ASSET TRACKING SOFTWARE	IMPLEMENTATION IS CURRENTLY OCCURING	4.5.3	YES	10,000		IN PROGRESS	ANNE
FINANCE	N/A	OP EXPENSE	OP EXPENSE	PAYROLL SOFTWARE CONVERSION	SCHEDULED TO BE COMPLETE LATE FEBRUARY	4.5	YES	10,000		IN PROGRESS	AUTUMN
OPS	CP# A23205	CAPITAL	CAPITAL	CANTILEVER AUTO GATES @ 3 LOC	INSTALLATION COMPLETE, FINISHING PROGRAMMING	1.1.3	YES	60,000		IN PROGRESS	JEREMIAH
OPS	CP #A22202	CAPITAL	CAPITAL	D1-1 BOOSTER STN UPGRADE	IN PROCESS, FINISHING FINAL DETAILS	1.2.13	YES	240,000		IN PROGRESS	JEREMIAH
OPS	CP #A22203	CAPITAL	CAPITAL	E2-1 RESERVOIR UPGRADE	SITE LEVELED, RFP WILL BE NEXT STEP	1.2.14	YES	110,000		IN PROGRESS	JEREMIAH
OPS	CP #A20014	CAPITAL	METER REPL	METER REPLACEMENT PROGRAM 2020-2025	CONTINUE METER REPLACEMENT	1.2.21	YES	250,000		IN PROGRESS	JEREMIAH
OPS	CP #A23206	CAPITAL	CAPITAL	WELL 14 INJECT UPGR & MIOX CL2 @ ALL	INTERIM DIRECTOR OF OPERATIONS IS REDESIGNING MIOX SYSTEM SETUP	1.2.25	YES	50,000		IN PROGRESS	JEREMIAH
OPS	CP #A23207	CAPITAL	CAPITAL	AMI METER CONVERSION	PROPAGATION STUDY IN PROCESS	1.1	YES	200,000		IN PROGRESS	JEREMIAH
OPS	CP #A22217	CAPITAL	CAPITAL	INVENTORY/EQUIP BUILDING	WORKING WITH COUNTY ON PERMITTING	1.1.3.3	YES	140,000		IN PROGRESS	JEREMIAH
ADMIN	CP #A21204	CAPITAL	CAPITAL	KEYLESS ENTRY	INSTALL KEYLESS ENTRY IN ADMIN AND OPS BUILDINGS FOR ADDED SECURITY CONTROLS	1.1.3	YES	45,000		IN QUEUE	DAVID
ADMIN	CP #A16003	CAPITAL	CAPITAL	CODIFICATION OF RECORDS	ARRANGE DISTRICT POLICIES INTO A SYSTEMATIC FORM (ADMIN CODE, RULES/REGS/EE RULES)	2.11.1	YES	10,000		IN QUEUE	SARAH/ DAVID
ADMIN/OPS	#A22216	OP EXPENSE	REPORTS & STUDIES	(CIP) CAPITAL IMPROV PLAN UPDATE	ENGAGE WITH ENGINEER TO UPDATE DISTRICT CAPITAL IMPROVEMENT PLAN	2.10.6	YES	250,000		IN QUEUE	SARAH/ JEREMIAH

Updated
02.07.24

Agenda Item No: 9A

Board of Directors Staff Report

MEETING DATE: 02/07/2024
PRESENTED BY: Sarah Johnson, General Manager
TOPIC: **LOCAL HAZARD MITIGATION PLAN**
RECOMMENDATION: Receive presentation, review, and provide input. No action is to be taken.

ANALYSIS:

JBWD currently has a Hazard Mitigation Plan in place, which is due to expire in June 2024. In June 2023, staff initiated the development of a new Hazard Mitigation Plan to replace the expiring one. This extensive planning process involved numerous stakeholders, including District staff, Hazard Mitigation Consultant Gary Sturdivan, Iridium Solutions Consultant Ray Kolisz, JBWD's Citizens Advisory Council, and external constituents such as Hi-Desert Medical Center, 29-Palms Water District, and Hi-Desert Water District. Today, we are presenting the final draft of the new plan for review and input from the Board of Directors.

Hazard mitigation planning reduces loss of life and property by minimizing the impact of disasters. It begins with the identification of natural disaster risks and vulnerabilities that are common in their area. After identifying these risks, long-term strategies are developed with the goal of protecting people and property from disaster events. Mitigation plans are key to breaking the cycle of disaster damage and reconstruction.

STRATEGIC PLAN ITEM: 4.7 – Continuously Improve the District's Emergency Preparedness
4.7.2 – Complete Hazard Mitigation Plan
2.0 – Meet regulatory requirements for water, wastewater, financial, and administrative functions.

FISCAL IMPACT: $42,500

2024

Joshua Basin Water District

Local Hazard Mitigation Plan Update

Consultant Primary Contact

Gary Sturdivan

Project Leader

Sturdivan Emergency Management, LLC

Gsturdivan@semcllc.com

JBWD Primary Contact

Sarah Johnson

General Manager

(760) 366-8438

TABLE OF CONTENTS

SECTION 1. INTRODUCTION

The Local Hazard Mitigation Plan (LHMP) update is a "living document" that should be reviewed, monitored, and updated to reflect changing conditions and new information. As required, the LHMP must be updated every five (5) years to remain in compliance with regulations and Federal mitigation grant conditions. In that spirit, this Local Hazard Mitigation Plan is an update of the Joshua Basin Water District's Hazard Mitigation Plan under review by the Federal Emergency Management Agency (FEMA).

1.1 PURPOSE OF THE PLAN

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

The purpose of the Local Hazard Mitigation Plan is to demonstrate the plan for reducing and/or eliminating risk in Joshua Basin Water District's service area. The LHMP process encourages communities to develop goals and projects that will reduce risk and build a more disaster resilient community by analyzing potential hazards.

After disasters, repairs and reconstruction are often completed in such a way as to simply restore to pre- disaster conditions. Such efforts expedite return to normalcy; however, the restoring of things to pre- disaster conditions sometimes result in feeding the disaster cycle; damage, reconstruction, and repeated damage. Mitigation is one of the primary phases of emergency management specifically dedicated to breaking the cycle of damage. Hazard mitigation is distinguished from other disaster management functions by measures that make JBWD infrastructure development and the natural environment safer and more disaster resilient. Mitigation generally involves alteration of physical environments, significantly reducing risks and vulnerability to hazards by altering the built environment so that life and property losses can be avoided or reduced.

Mitigation also makes it easier and less expensive to respond to and recover from disasters.

Also, with an approved (and adopted) LHMP, Joshua Basin Water District is eligible for federal disaster mitigation funds/grants (Hazard Mitigation Grant Program, Pre-Disaster Mitigation, and Flood Management Assistance) aimed to reduce and/or eliminate risk.

1.2 AUTHORITY

In 2000, FEMA adopted revisions to the Code of Federal Regulations. This revision is known as "Disaster Mitigation Act (DMA)." DMA 2000, Section 322 (a-d) requires that local governments, as a condition of receiving federal disaster mitigation funds, have a Hazard Mitigation Plan (HMP)

that describes the process for assessing hazards, risks and vulnerabilities, identifying and prioritizing mitigation actions, and engaging/soliciting input from the community (public), key stakeholders, and adjacent jurisdictions/agencies.

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

JBWD legal jurisdiction encompasses serving water to the Joshua Tree area in the unincorporated area of San Bernardino County, California, which is known as the High Desert. Approximately ½ hour drive from the low desert region of Palm Springs. The Water District has legal authority for infrastructure, pipelines, wells, and water storage to serve this purpose. JBWD does not have legal authority for zoning, land use, new construction, planning, building inspections, or codes. These functions are assigned to San Bernardino, County,

1.3 WHAT'S NEW

The 2018 Joshua Basin Water District Hazard Mitigation Plan contained a detailed description of the planning process, a risk assessment of identified hazards for the JBWD Service Area, and an overall mitigation strategy for reducing the risk and vulnerability from these hazards. Since the approval of the plan by FEMA, progress has been made by JBWD on the mitigation strategy. As part of this 2023 LHMP update, a thorough review and update of the 2018 plan was conducted to ensure that this update reflects current conditions and priorities to realign the overall mitigation strategy for the next five-year planning period. This section of the plan includes the following:

What's New in the Plan Update. This section provides an overview of the approach to updating the plan and identifies new analyses, data and information included in this Plan update to reflect current service area conditions. This includes a summary of new hazard and risk assessment data as it relates to the JBWD Service Area as well as information on current and future development trends affecting infrastructure vulnerability and related issues. The actual updated data and analyses are contained in their respected sections within this 2023 LHMP update.

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

2018 Mitigation Strategy Status and Successes. This section provides a description of the status of mitigation actions from the 2018 plan and indicates whether a project is no longer relevant or is recommended for inclusion in the updated 2023 mitigation strategy.

This What's New section provides documentation of JBWD Service Area's progress or changes in their risk and vulnerability to hazards and their overall hazard mitigation program. Completion

of this 2023 LHMP Update further provides documentation of the JBWD's continued commitment and engagement in the mitigation planning process.

1.4 NEW RISK ASSESSMENT

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

- A new assessment of updated hazards affecting the JBWD Area was completed resulting in additional hazards added to planning documents new hazards include climate change, drought and terrorism.
- An entire rework of the risk assessment for each identified hazard. This included reworking the hazard profile and adding new hazard event occurrences; redoing the entire vulnerability analysis to add items identified below and updating the vulnerability assessment based on more recent hazard data.
- An update of the flood hazard analysis to include an updated analysis of the 100-year flood, an analysis of the 500-year flood, including the use the new and updated DFIRMs.
- An enhanced vulnerability assessment.

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

Terrorism is now a reoccurring possibility within the United States, due to the terror attack in San Bernardino County in December of 2015, a hazard profile on this matter has been added to this plan.

1.5 SUCCESSFUL MITIGATION IMPLEMENTATION

JBWD has completed review of past seismic retrofit studies and has applied studies to current and future projects. JBWD is also participating annually with the Great California Shakeout to prepare and train employees for earthquakes.

- District Office and Shop security camera system was upgraded in 2019 as a mitigation effort to enhance security.
- SCADA Server security cameras installation in 2019 for cyber security and increase online security and physical security.

- Complete rehabilitation for Well 14 completed in 2022, this was done due to faulty shaft and bowls and well lining leading to contamination to the potable water.
- D-1-1 Booster Station complete rehabilitation in 2023, replacement of motor and booster pump, along with increased security to station.

A Grant was written and received by Twentynine Palms Water District about 6 years ago to build an intertie, but California Transportation (Caltrans) became involved and wanted the pipeline increased in concrete, which made to project very expensive. The grant was given back to CalOES and FEMA.

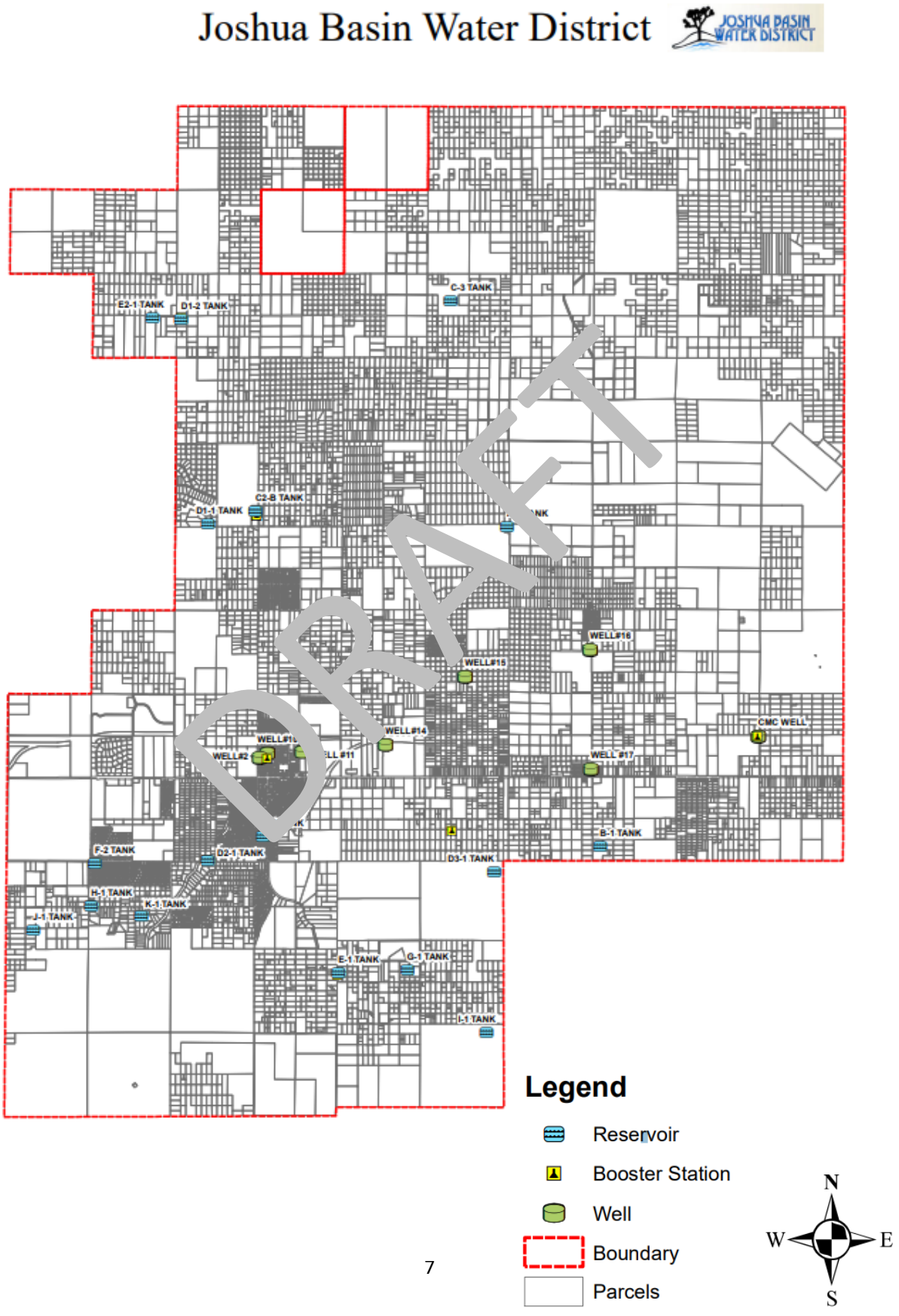
PHYSICAL SETTING

Joshua Basin Water District (JBWD) is a unique High Desert Community in the on the Southern Boarder off the Mojave Desert in San Bernardino Count, just north of the Little San Barnardino and Pinto Mountains, Located 35 miles north of Palm Springs, California at an elevation of 2,280 to 4,920 feet above sea level. The Joshua Tree area is known for its pure underground water, crystal clear AIR, and deep blue skies. JBWD is nestled in between Joshua Tree National Park and the Twentynine Palms Corps Ground Combat Center to the northeastern boundary. JBWD also has three water districts in the local area. Bighorn Desert View Water District is to the north, Twentynine Palms Water District is to the east and Hi-Desert Water District is to the south. JBWD has one intertie with other local water agencies. These inter-ties are with Hi-Desert Water District. There is no inter-tie between Twentynine Palms Water District and JBWD.

The Little San Bernardino Mountains and Joshua Tree National Park is the south. The notorious San Andreas Fault runs just south of JBWD. The blue cut fault runs parallel to highway 62. The Pinto Mountain Fault runs to the north of the north of the district's service area.

The area is known for being hot is very hot in the summer months and very cold in the winter months. The area even gets some snow in the winter months. The High Desert area is prone to flooding and high winds in the fall and winter months. The flooding often washes out the main roadway, Highway 62 runs from Interstate 10 in the south to highway 177 to the east. The only other way into and out of the valley is highway 247 which runs north to highways 40 and 15.

Figure 1. JBWD Service Map



HISTORY

The JBWD was formed in 1963 by incorporating several small private water suppliers in the area. Joshua Basin Water District purchased several of these small water suppliers. This formed Joshua Basin Water District as a Special District under California Water Code Section 3000 et seq. (County Water District Law). The District is governed by a five-member Board of Directors, elected at-large from within the District's service area.

The Board of Directors employ a General Manager. The General Manager administers the day-to-day-operations of the District. The District grew in the 1950, 1960, 1970, but has not had a lot of growth until the millennials found Joshua Tree National Park and discovered the park and the beauty of the sounding area. The Joshua Tree area is now a destination place to hang out and enjoy the unspoiled surroundings. Being a destination spot, Johua Tree has a population that reaches a high in the spring, summer, and fall. There are many short-term rentals in Joshua Tree. There are many short-term rentals in Joushua Tree.

The District currently owns and operates 17 above ground water reservoirs; 5 active producing wells; 1,305 fire hydrants; 4,700 water meters; and a hydro-pump pressure station and several water pressure reduction stations. JBWD also maintains a Recharge Pond, and a Waste Water Treatment Plan facility at the Hi-Desert Medical Center is under the District's manageme

The District's plans under the new Regional Recycled Water Distribution System are to tie the two existing systems together, which will improve operations and reliability, plus provide recycled water over the entire service area.

1.6 CLIMATE

The average rainfall[1] for Joshua Tree where the district office and the Corporate Yard are located, ais 2.66 inches with the most rain falling from January through March of each year. with average temperatures ranging from 37 – 100 degrees Fahrenheit. The regions temperate, Mediterranean climate fosters moderate winters, warm summers, and generally low humidity.

Table 1. Average Max and Min Temp and Total Precipitation for the City of Joshua tree

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Avg. Max. Temp (F)	60	64	70	77	86	95	100	99	93	82	69	60	100.4 F
Avg. Min. Temp (F)	37	39	42	45	54	60	69	68	64	52	43	35	66.6 F
Avg. Total Precipitation	0.77	0.82	0.60	0.10	0.33	0.04	0.24	0.55	0.34	0.39	0.64	0.29	2.48 in

[1] Average weather Joshua Tree 1981-2010 normal US Climate Data https://www.usclimatedata.com/

1.7 DEMOGRAPHICS

Demographics for our service area cities are based on Census 2020[2]. There are 7,567 residents in Joshua Tree, with a median age of 40.2. Of this, 45.88% are males and 54.12% are females. US-born citizens make up 89.69% of the resident pool in Joshua Tree, while non-US-born citizens account for 6.99%. Additionally, 3.33% of the population is represented by non-citizens. A total of 6,223 people in Joshua Tree currently live in the same house as they did last year. See our service area plans for details:

- **Population:** 7,567
- **Area:** 37.04 sq. miles
    - **Land Area:** 37.04 sq. miles
    - **Water Area:** NA
- **Population Density:** 204.27 people per sq. mile
- **Elevation:** 2,959.65 ft

White-collar workers make up 78.82% of the working population in Joshua Tree, while blue-collar employees account for 21.18%. There are also 18 entrepreneurs in Joshua Tree (21.71% of the workforce); 1,551 workers employed in private companies (54.48%); and 607 people working in governmental institutions (21.32%).

There are a total of 2,904 households in Joshua Tree, each made up of around 2 members. Family establishments represent 53.8% of these Joshua Tree households, while non-family units account for the remaining 46.11%. Additionally, 25.83% of households have children and 74.17% of households are without children.

The average annual household income in Joshua Tree is $66,854, while the median household income sits at $47,944 per year.

[2] Service area population from http://datausa.io

SECTION 2. PLAN ADOPTION

2.1 ADOPTION BY LOCAL GOVERNING BODY

Pursuant to the mitigation planning regulations, Joshua Basin Water District LHMP will be submitted to the California Office of Emergency Services (Cal EOS) for review and approval. Cal OES will conduct a review of the Plan in accordance with the Code of Federal Regulations; once this review is complete and any revisions are made, CalOES will forward the plan to FEMA for another review and revisions, as FEMA requires. CalOES will notify JBWD when FEMA has approved the final LHMP. The final approval letter of approval will be pending adoption by the District's Board of Directors. The Board of Directors Resolution will be sent to CalOES and FEMA. SEMC will send a copy of the LHMP and Resolution to the San Bernardino Office of Emergency Management.

2.2 PROMULGATION AUTHORITY

The Promulgator Authority for the adoption of the Hazard Mitigation Plan Joshua Basin Water District and for the Board of Directors and incorporation of the LHMP into the San Bernardino County Operational Area Multi-Jurisdictional General Plan is:

Mr. Tom Floen – President

Representing Division 4

Ms. Stacy Doolittle – Vice President
Representing Division 5

Ms. Jane Jarlsberg – Director
Representing Division 3

Thomas Short – Director
Representing Division 1

David Flick – Director
Representing Division 2

Primary Point of Contact

The Point of Contact for information regarding this LHMP is:

Sarah Johnson (General Manager)
Joshua Basin Water District
61750 Chollita Road
Joshua Tree, CA 92252
(760) 366-8438 (Office)

sjohnson@jbwd.com

Consultant Primary Contact

Gary Sturdivan
Project Lead
Sturdivan Emergency Management Consulting, LLC.
(909) 658-5974
gsturdivan@semcllc.com

SECTION 3. PLANNING PROCESS

3.1 PREPARING FOR THE PLAN

JBWD developed a broad approach in preparation for the update to our hazard mitigation plan. As an active participant with the County of San Bernardino's Multi-Hazard Multi-Jurisdictional Mitigation Plan, JBWD used the County provided resources to assist in the development and evaluation of data to start the update of plan.

Internally JBWD has a wealth of experienced and resourceful employees that provided benefit to the program. The JBWD team participated in regular discussions, staff meetings, and in health and safety committee meetings in support of the plan update. The JBWD team were invited to the meeting through emails and Microsoft Outlook calendar. Members of this team also participated in community outreach events such as fairs and local city functions.

In addition to participating at the County level, JBWD staff participated in plan updates with local agencies that were also undergoing plan updates. This included staff from the City of Chino, Chino Hills, Chino Valley Unified School District, Chino Valley Independent Fire District, Chino Valley Medical Center, and the Chino Valley Chamber of Commerce. This team also participated in the community outreach with local businesses and members of the public through fairs and events.

The District's approach in updating the plan consisted of:

- Establishing the internal planning team
- Coordination with outside agencies, organizations, jurisdictions, and the public
- Documenting past events
- Posting the meeting agendas, meeting minutes, and draft LHMP onto JBWD website and asking for public input and comments on the planning process
- Conducting public outreach
- Reviewing and updating the hazards
- Reviewing and updating mitigation measures
- Plan Adoption

During the planning process, the Planning Team utilized the following plans to gain information on the hazards facing the area and mitigation goals of JBWD. Relevant information from each of the following plans, including local City and County Governments priorities, were included when aligned with JBWD strategies and projects and were incorporated into the JBWD LHMP.

JBWD Water Master Plan is a basin plan that deals with community water systems, water storage, water shortage, and climate change to ensure all the water agencies that take water from the local basin are all in agreement to water shortages, water replenishment, and effects of climate change to our water. The following plans were used:

Table 2. Reference Plans Used

Study Plan	Key Information
Urban Water Management Plan	Land Use Trend
22018 JBWD LHMP	Hazard Identification, Mitigation Measures
San Bernardino County HMP	Mitigation Measures and Goals, Hazards,
USGS Golden Guardian 2008	Earthquakes, Affects, Planning
2020 San Bernardino County LHMP	Land Use For Area, Future Projects
2018 California HMP	Goals For The State Of California
San Bernardino County Flood Control	Gain Information On Future Flood Control Projects
FEMA Flood Insurance Study for S.B County	Flood History

The planning process consisted of:

3.2 PLANNING TEAM

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

Sarah Johnson - General Manager
Description of Involvement: Member of Planning Team

Jeremiah Nazario
Description of Involvement: Member of Planning Team

Scott Carpenter
Description of Involvement: Member of Planning Team

Lisa Thompson
Description of Involvement: Member of Planning Team

Scott Carpenter
Description of Involvement: Member of Planning Team

David Shook
Description of Involvement: Member of Planning Team

EXTERNAL PLANNING TEAM

Ray Kolisz, Consultant

STAFF CONSULTANT

Matthew Shragge
General Manager at Twentynine Palms Water District

3.3 COORDINATION WITH OTHER EXTERNAL JURISDICTIONS, AGENCIES, AND ORGANIZATIONS

The Internal and External Planning Teams include 6 people from Joshua Basin Water District, one person from local water agency, and one person from a management Consultant. The County of San Bernardino OES was invited to be on the Planning Team, but they were unable to attend, however, they reviewed that plans content. In Appendix A is the meeting matrix outlining the subjects covered and the attendees.

The Planning Team participated in monthly meetings to coordinate efforts, provide input, and receive support for the LHMP. The support included receiving technical expertise, resource materials, and tools. The District facilitated the LHMP process and provided information which follows FEMA requirements for the program. The tools, resource materials, and other project related information are maintained on a project portal on the District's website https://www.JBWD.org/ which allowed access to the information by all participants and the public, screenshots are located under Appendix B. Mr. Cody Sturdivan's contact information was on each document for questions and concerns. The Planning Team reviewed the document and made corrections or voiced concerns to the consultant. These comments were discussed at the next Team meeting, and corrections were then made to the document, these meetings were not publicly held.

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

This team's objective consisted of:

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

JBWD staff participated in each of the scheduled stakeholder meetings and conference calls facilitated by SEMC related to the update project. See **Appendix A** for meeting agendas discussing LHMP update.

3.4 PUBLIC INVOLVEMENT/OUTREACH

In support of the Joshua Basin Water District's LHMP update, the District solicited information from members of the public through various methods. JBWD General Manager, conducted outreach through various social media including Facebook in order to distribute a questionnaire, Ms. Johnson also, visited the local Hospital and San Bernadino County Mental Health offices in Joshua Tree, along with posting sections of the draft LHMP onto JBWD website.

These methods consist of:

- Community Outreach events
- Local Meetings and visits with local agencies
- Local Emergency Coordination meetings
- Plan/Project inclusion in the District's Programs which includes mitigation actions that require public involvement and are open for public comment. (10 Year Capital Improvement Plan, Annual Budget Report, etc.)

Annual, The Great ShakeOut Exercise

Joshua Basin Water District participated in The Great ShakeOut. Through this plan, we provide information on disaster response related to District's business and water. This information includes steps the District has taken to respond to earthquake emergencies that impact the District and the surrounding community.

3.5 ASSESS THE HAZARDS

A critical component of the LHMP process is to assess the likely hazards that may impact the District's facilities and operations. It is important to have a thorough understanding of these hazards without over-analyzing remote or highly unlikely hazards.

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

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

3.6 SET GOALS

The goal setting process for the 2023 Hazard Mitigation Plan update consisted of the Planning Team reviewing the hazard exposure and scenario impacts developed during the Risk Assessment portion of the process. With understanding of the risk, the community is potentially facing, the Planning Team then re-evaluated the 22018 Hazard Mitigation Plan Goals and Objectives; assessed their status and effectiveness in meeting the 22018 Mitigation Measures and identified new Goals and Objectives.

3.7 REVIEW AND PROPOSE MITIGATION MEASURES

The process of identifying mitigation measures began with a review and validation of the previous mitigation measures in the District's 2018 Hazard Mitigation Plan. Using the existing plan as a starting point, the planning team completed an assessment of whether the measures were still valid. Through this discussion, the development of new mitigation measures was determined.

The planning team identified and analyzed mitigation measures relative to each of the hazards that influence the District. This analysis assisted the District in developing an implementation strategy for the prioritization of mitigation measures. Meetings (both in-person and virtual) were held with the planning team, both as a group, and through meetings within their own departments to solicit input on the plan updates.

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

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

In addition to the STAPLEE methodology, each Stakeholder Planning Team incorporated other criteria/factor questions into the process to help engage and solicit input from members.

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

Does the Action:

1. Solve the problem?
2. Address Vulnerability Assessment?

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

Can the Action:

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

Will the Action:

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

Is there:

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

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

3.8 DRAFT THE HAZARD MITIGATION PLAN

The JBWD Hazard Mitigation Plan Update was drafted by the Project Manager, based on input and comments provided by the Planning Team. As indicated previously, the Planning Team used the 2011 and 22018 LHMP as a starting point but revised it to reflect updated information.

The District's consultant led the Planning Team and prepared the draft LHMP with input from the Planning Team, outside water district in the area, and the public. The Planning Team reviewed and commented on the draft LHMP, and subsequent changes were made before the LHMP was finalized and adopted by the Board of Directors. All draft documents were posted on the District's website. Notices were sent to all water customers in the service area, via. Public Updates, Public social media that JBWD has at its disposal. Stating all LHMP documents were posted on the website and asked for comments.

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

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

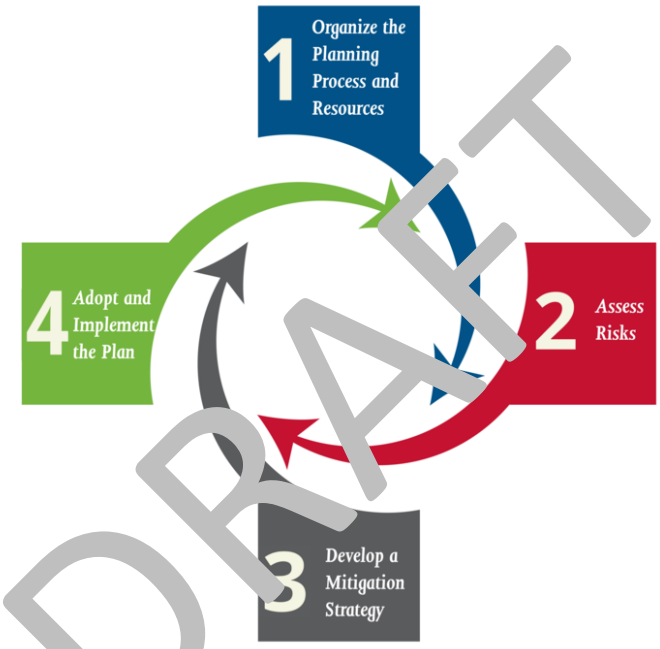
3.9 ADOPT THE PLAN

After the public review, the draft plan will be submitted to the State of California OES for review. Once the State has approved the LHMP, the document will be sent to FEMA by the State. FEMA will provide the District with an "Approval Pending Adoption" letter when the Hazard Mitigation Plan update meets all federal requirements. Upon receipt of this letter, the final plan will be posted on the District's Website for a 30-day public comment period and then submitted to the Water District's Board of Directors for consideration and adoption. Once adopted, the final resolution will be submitted to FEMA for incorporation into the Local Hazard Mitigation Plan, and a copy of the resolution will be sent to CalOES and FEMA. A copy of the final LHMP will be delivered to San Bernardino County office of Emergency Management.

SECTION 4. RISK ASSESSMENT

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

The purpose of this section is to understand the hazards and their risks in Joshua Basin Water District service area. There are generally four steps in this process: 1) Hazard Identification 2) Vulnerability Analysis 3) Risk Analysis and 4) Vulnerability Assessment, including an estimation of potential losses. These are four different items; however, the terms can be used interchangeably.



4.1 HAZARD IDENTIFICATION

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

4.2 HAZARD SCREENING CRITERIA

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

experience and historical data pertaining to each hazard and developed the following ranked list in table 3.

Table 3. Hazard Risk Rankings

Hazard	Risk Ranking (1-4)
Earthquake	1
Climate Change Induced Drought	2
Cyber Security	2
Flooding	3
Wildfire	3
Windstorm	4
Dam Inundation	4
Freezing events	4
Volcanoes	4
Tsunami	4
Landslides	4

The natural hazards that were considered not to affect or a risk to JBWD were given a ranking of 4 "Least Likely" and are not considered applicable to JBWD for mitigation.

Hazard Assessment Matrix

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

Probability Ratings: Highly Likely (1), Likely (2), or Somewhat Likely (3)

Impact Ratings: Catastrophic, Critical, or Limited

SCREENING ASSESSMENT MATRIX

The screening assessment matrix was used for JBWD's hazards. The hazards have been placed in the appropriate cell of the corresponding "Screening Assessment Matrix" based on the Planning Team's collective experience. The hazard screening assessment is shown in Table 4.

Prioritization of the hazards is discussed in the following section. The Probability/Impact rating is based on a 5-year occurrence. The percentages represent the likelihood within the 5-year occurrence.

Table 4. Screening Assessment Matrix

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

4.3 HAZARD PROFILES

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

4.3.1 EARTHQUAKE

Probability: (75-100%) Highly likely – Historical earthquake data for JBWD and its region indicate there have been at least 3 significant earthquakes within the last 14 years, however there are earthquakes in southern California that occur daily but are insignificant to JBWD. This equates to a significant earthquake every 1.75 years on average or a 57.14 percent chance of a significant earthquake in any given year. Based on this data JBWD determined the future earthquake occurrence within their boundaries continue to be highly likely.

Impact: Catastrophic

Priority: Highly Likely

* This section looks at all the hazards affecting the District within its boundaries and identified by the Planning Team.

General Definition: An earthquake is defined as a sudden, rapid shaking of the earth caused by the breaking and shifting of rock beneath the earth's surface. For hundreds of millions of years, the forces of plate tectonics have shaped the earth's surface. As the plates move slowly over,

under, and past each other to create mountains, valleys, and all other geological formations. Usually, the movement is gradual; however, increased movement occurs when the plates become locked together, unable to release the accumulating energy. When the accumulated energy grows strong enough, the plates break free causing the ground to shake. Most earthquakes occur at the boundaries where plates meet; however, some earthquakes occur in the middle of plates.

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

Earthquakes strike suddenly at any given time of year and with[illegible]t warning. On a yearly basis, 70 to 75 damaging earthquakes occur throughout the world. Es[illegible]tes of losses from a 7.8 magnitude earthquake in the southern section of the San Andreas [illegible]ult System (located in the regional area near Los Angeles County) could easily r[illegible]ach $200 billi[illegible] in damages. This information was pulled from the California Great Sh[illegible]eOut© USGS scenario.

Earthquakes pose a moderate to very high risk for 45 stat[illegible]and territories in the United States of America, and earthquakes occur in every reg[illegible]n o[illegible]he Coun[illegible]y. California experiences the most frequent damaging earthquakes of the 45 states and te[illegible]ies of the United States; however, Alaska experiences the greatest numb[illegible]of large[illegible]thquakes, most located in uninhabited areas. The nearby southern section of th[illegible]San A[illegible]dreas f[illegible]ult is ranked in the top five (5) most likely faults to cause major damage in the Uni[illegible]tes by United States Geological Survey (USGS).

The source for the earthq[illegible]ke p[illegible]file is [illegible]report that describes a new earthquake rupture forecast for California develop[illegible]by the 200[illegible]Working Group on California Earthquake Probabilities (WGCEP 2007). The Ear[illegible]quake W[illegible]king Group was organized in September 2005 by the USGS, the California Geolo[illegible]al S[illegible]vey (CGS), and the Southern California Earthquake Center (SCEC) to better understand the [illegible]ocations of faults in California. The group produced a revised, time-independent forecast for California for the National Seismic Hazard Map.

Climate Change Impacts:

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

Population– Vulnerability to earthquake is unlikely to increase as a result of climate change.

Critical facilities – All critical facilities exposure and vulnerability are unlikely to increase as a result of climate change.

Vulnerability: The socially vulnerable population includes the young, the elderly, people with mental health issues and people experiencing poverty, that may live under bridges, in tents or makeshift housing along waterways, or freeway bridges. The socially vulnerable populations are most susceptible based on many factors, including how the people respond to their financial ability to purchase supplies. Food, clothing, safe housing may be manageable for only short periods of time and then fall into extreme poverty. With lack of resources and the ability to navigate special needs in an emergency, or to manage obtaining adequate food, housing, clothing or medical treatment.

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

The following table 5 is a replacement cost estimate for all JBWD owned critical facilities.

Table 5. Earthquake Magnitude Replacement Costs

JBWD / Earthquake Magnitude	Replacement Value
Magnitude 7.0 or Above (Very High Impact)	
JBWD – All Critical Assets	$800 Million
Magnitude 5.0 or 6.9 (Moderate Impact)	
JBWD – All Critical Assets	$300 Million
Magnitude 1.0 or 4.9 (Low Impact)	
JBWD – All Critical Assets	$5 Million

Description: The areas around JBWD Facilities are seismically active since it is situated on the boundary between two fault lines. There have been many earthquakes in and around the District's service area, the 1992 Landers earthquake caused over $1 million in damages to the District.

Figure 2 . JBWD Earthquake Fault Lines

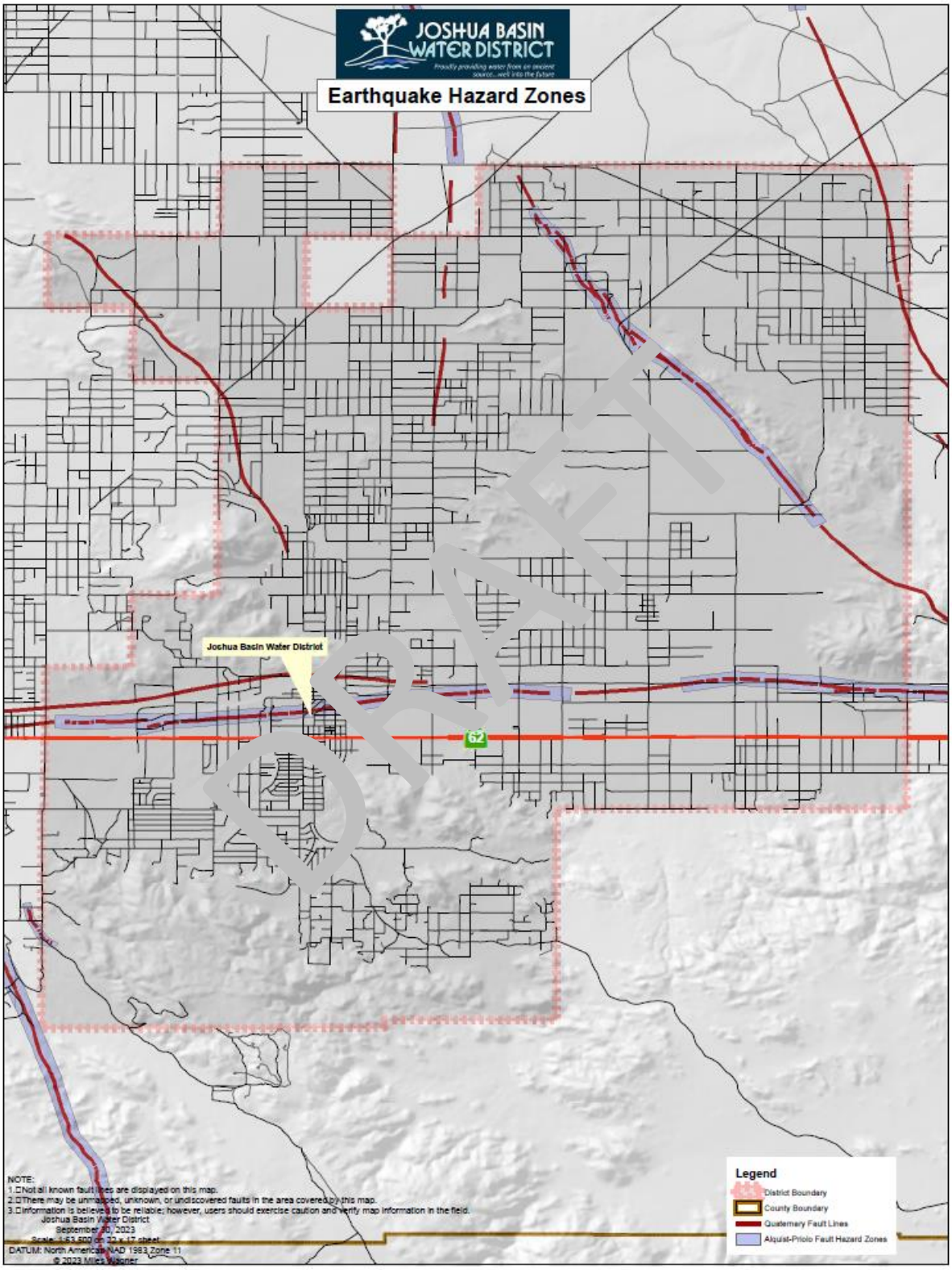


Figure 3. Joshua Basin Water District, USGS ShakeOut Map

Figure 4. USGS Modified Mercalli Intensity Scale

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

The greatest earthquake threat in the United States is along tectonic plate boundaries and seismic fault lines located in the central and western states; however, the Eastern United State does face moderate risk to less frequent, less intense earthquake events.

Figure 5. United States Earthquake Hazard Map

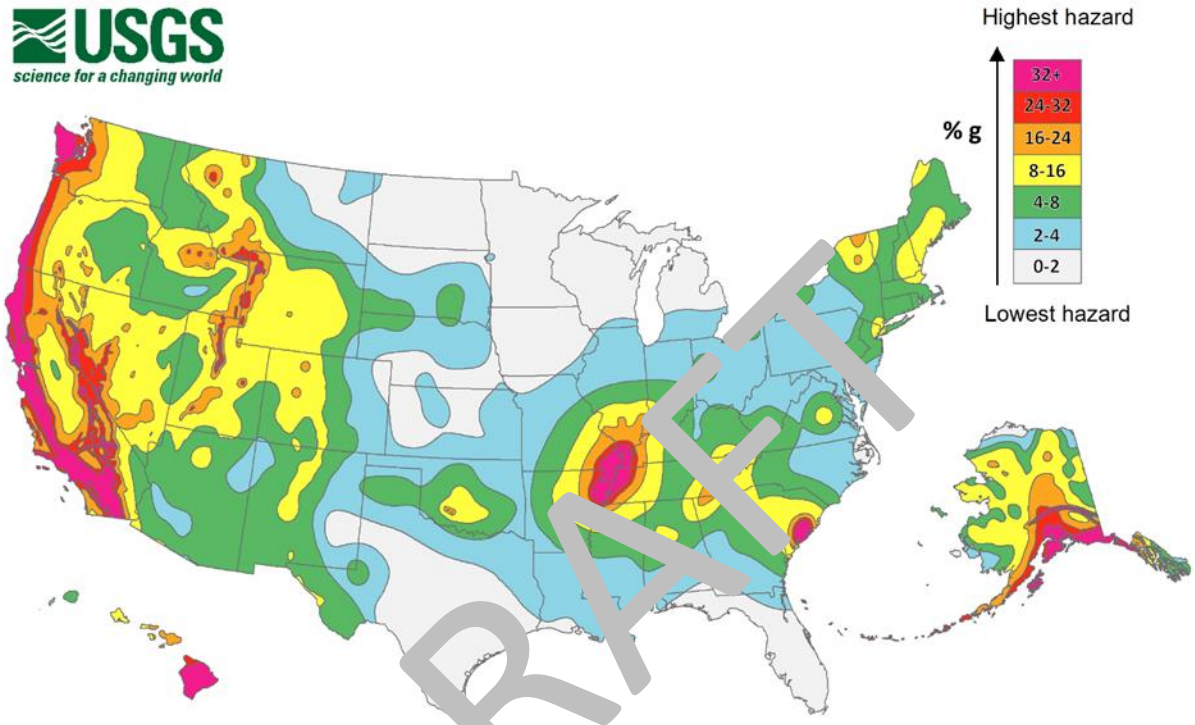


Table 6. Significant Earthquakes within San Bernardino County

Date	Area	Mag (M_w)	Total damage / notes
7/29/2008	Chino Hills	5.4	**No damage to JBWD**
1/15/2014	La Habra	5.1	**No damage to JBWD**
3/29/2014	La Verne	4.4	**No damage to JBWD**
7/5/2014	Borrego Springs	5.4	**No damage to JBWD**
1/25/2018	Trabuco Canyon	4.0	**No damage to JBWD**
7/4/2019	Ridgecrest	6.4	**No damage to JBWD**
7/6/2019	Ridgecrest/Trona	7.1	**No damage to JBWD**
9/10/2019	Wildomar	4.0	**No damage to JBWD**

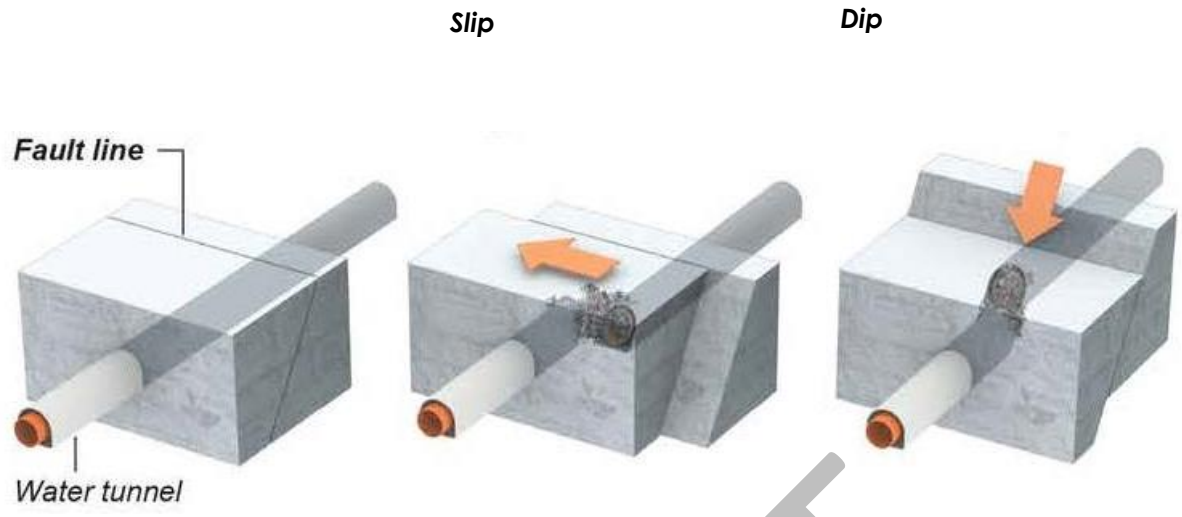
Within the 2018-2023 timeframe, there was a federal and/or state declaration declared for earthquake within the JBWD service area. On July 8, 2019, The President issues an emergency declaration (EM-3415-CA) under the authority of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, 42 U.S.C. 5121-5207 (the Stafford Act), as follows:

"I have determined that the emergency conditions in certain areas of the State of California resulting from earthquakes beginning on July 4, 2019, and continuing, are of sufficient severity and magnitude to warrant an emergency declaration under the Robert T. Stafford Disaster Relief and Emergency Assistance Act, 42 U.S.C. 5121 ET SEQ. ("the Stafford Act"). Therefore, I declare that such an emergency exists in the State of California…"

Impact Statement: A significant earthquake could have devastating impacts on JBWD and its assets. Shaking during earthquakes can cause structural failures, while ground displacement and liquefaction can cause infrastructure to sink, sag, float, rupture, or sever completely. Access to all assets may be impeded if the roads needed to access them are damaged and impassable. An extended loss of power or widespread damage to a system could impair the District's ability to provide service, especially if generators are compromised. This could in turn lead to not only a loss of service but also a loss of revenue for a time while costly repairs are being made. Fires following earthquakes are also a significant concern and could impact operations. Direct impacts to employees are possible, including injury, death, and an impeded ability of essential personnel to report for duty may also hinder operations.

There is no increase of impact from earthquakes that can be caused by Climate Change. Earthquakes can cause displacement which would lead to changes in population patterns throughout their service area. JBWD has no jurisdiction over land use, development and zoning socially vulnerable populations and/or land development within their service area especially post-earthquake disaster.

Figure 6. How Ground Displacement Can Severe Pipes



Liquefaction may cause buried domestic water pipes to sink, impacting gravity-fed systems. Once liquefied soils re-solidify after a quake, they will have to be dug up and repaired. Lateral spreading may damage wells and percolation ponds. JBWD could experience a loss of water from damaged systems.

State Water Project assets like water pipelines, ground shaking, displacement, and liquefaction may cause canals and laterals to crack, sever and otherwise fail.

Building Facilities: Shaking, ground displacement, and liquefaction have the potential to cause structural failure to buildings, including the office buildings at the District's administrative buildings. Less catastrophic events may cause unanchored furniture and items on shelves to fall. If an event was to occur during working hours, failure may result in employee and customer deaths and injuries. Further, crews out in the field may also be injured or killed.

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

4.3.2 CLMATE CHANGE INDUCED DROUGHT

Probability: (75-100%) Highly likely – Historical drought data for JBWD and its region indicate there have been at least 5 multi-year significant droughts within the last 47 years. This equates to a drought every 9.4 years on average or a 10.63 percent chance of a drought in any given year. Based on this data and given the multi-year length of droughts and future climate change affects, JBWD determined the future drought occurrence within their boundaries continue to be highly likely.

Impact: Critical

Priority: Highly Likely

* This section looks at all the hazards affecting the District within its boundaries that were identified by the Planning Team.

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

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

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

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

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

Along with this executive order, and in accordance with the State Water Resources Control Board (SWRCB) and California Water Code (CWC) requirements as outlined in Sections 10632 and 10644, urban water supplies in California would have to prepare Annual Water Supply and Demand Assessments (AWSDA) and submit these assessments annually to the state to remain in compliance with water conservation efforts. JBWD submitted their 2022 AWSDA and in the process of submitting their 2023 AWSDA prior to the July 1st deadline. JBWD promotes its water conservation efforts to its customers by actively making public notifications on its website and sending reminders. Current water schedule for all JBWD customers is posted online as well its permanent water conservation requirements to continue its efforts to conserve water to prepare for California's drought conditions.

Climate Change Impacts:

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

Population – Population exposure and vulnerability to drought are unlikely to increase as a result of climate change.

Critical facilities – All critical facilities exposure and vulnerability are likely to increase as a result of climate change.

Vulnerability &Impacts – Underserved and vulnerable populations they serve include people who are socioeconomically disadvantaged, people with limited English proficiency; geographically isolated or educationally disenfranchised people; people of color as well as those of ethnic and national origin minorities; women and children; individuals with disabilities and others with access and functional needs; and seniors. Those who may live under bridges, in tents or makeshift housing along waterways. The socially vulnerable populations are most susceptible based on many factors, including how the people respond to financial ability to purchase supplies. Food, clothing, safe housing may be manageable for only short periods of time and then fall into extreme poverty. With lack of resources and the ability to navigate special needs in an emergency, or to manage obtaining adequate food, housing, food clothing or medical treatment.

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

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

Table 7. Drought Severity Replacement Costs

JBWD / Drought D0-D4 Severity	Replacement Value
D4 (Exceptional Drought)	
JBWD - All Critical Assets	$150 Million
D3 (Extreme Drought)	
JBWD - All Critical Assets	$100 Million
D2 (Severe Drought)	
JBWD - All Critical Assets	$50,000
D1 (Moderate Drought)	
JBWD - All Critical Assets	$20,[illegible]00
D0 (Abnormally Dry)	
JBWD - All Critical Assets	$1[illegible]

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

The maps below are taken from https://droughtmonitor.unl.edu/Maps/MapArchive.aspx and show the drought differences in the period between January 2023 and October 2023. Note the drastic difference between the two drought maps.

Figure 7. Drought Monitor January 2023

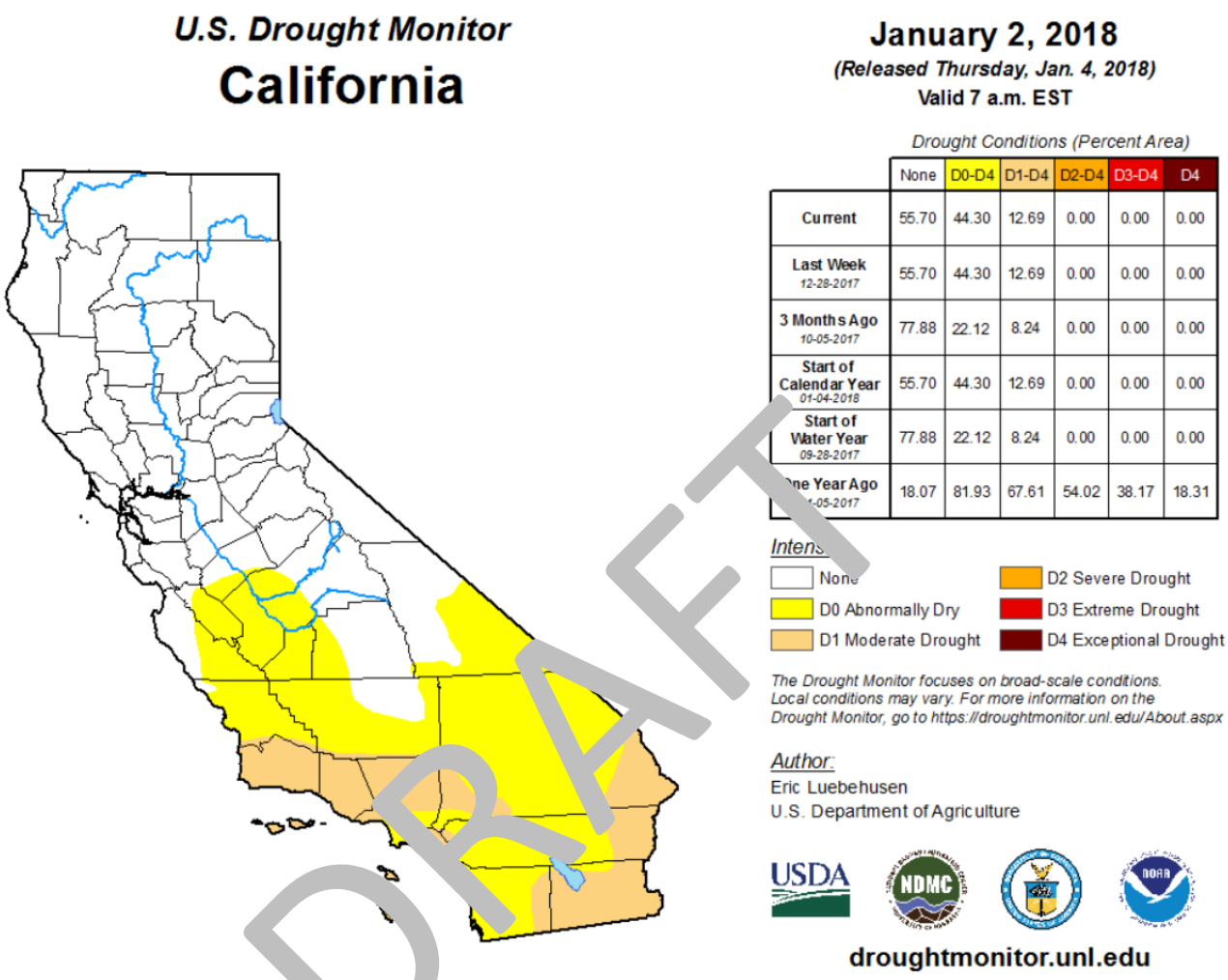


Figure 8 Drought Monitor October 2023

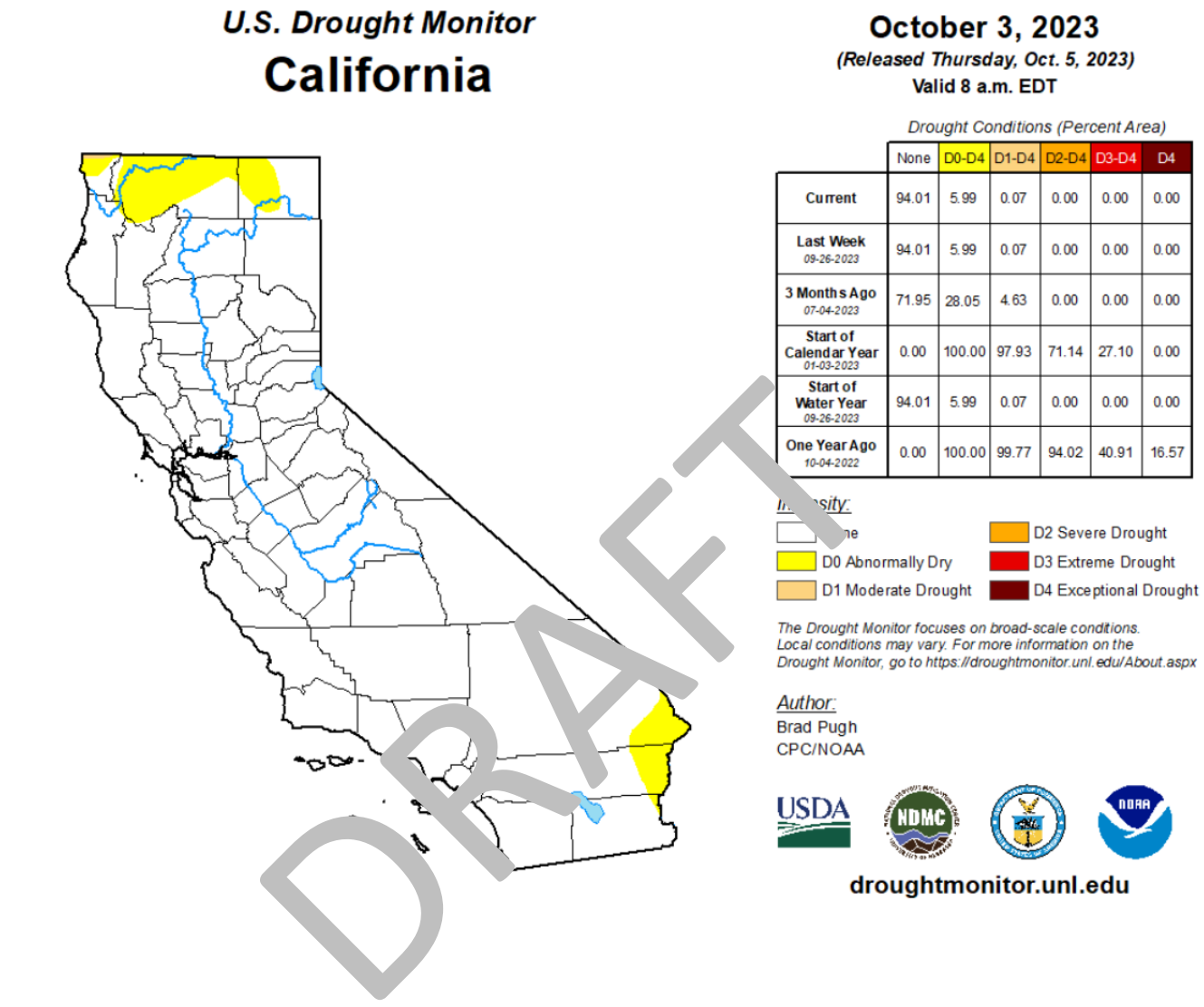


Table 8. U.S. Drought Monitor

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

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

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

Table 9 Drought History

Year	Drought History
1841	The drought was so bad that "a dry Sonoma was declared entirely unsuitable for agriculture"
1864	This drought was preceded by the torrential floods of 1861-1862, showing the fluctuation in climate back in the 1800s.
1924	This drought encouraged farmers to start using irrigation more regularly because of the fluctuation in California weather the need for consistent water availability was crucial for farmers.

1929–1934	This drought was during the infamous Dust Bowl period that ripped across the plains of the United States in the 1920s and 1930s. The Central Valley Project was started in the 1930s in response to drought.
1950s	The 1950s drought contributed to the creation of the State Water Project.
1976–1977	1977 had been the driest year in state history to date. According to the *Los Angeles Times*, "Drought in the 1970s spurred efforts at urban conservation and the state's Drought Emergency Water Bank came out of drought in the 1980s."
1986–1992	California endured one of the longest droughts ever observed from late 1986 through early 1992. Drought worsened in 1988 as much of the United States also suffered from severe drought. In California, the six-year drought ended in late 1992 as a significant El Niño event in the Pacific Ocean (and the eruption of Mount Pinatubo in June 1991) most likely caused unusual persistent heavy rains.
2007–2009	2007–2009 saw three years of drought conditions, the 12th worst drought period in the state's history, and the first drought for which a statewide proclamation of emergency was issued. The drought of 2007–2009 also saw greatly reduced water diversions from the State Water Project. The summer of 2007 saw some of the worst wildfires in Southern California history.
2011-2017	From December 2011 to March 2017, the state of California experienced one of the worst droughts to occur in the region of record. The period between late 2011 and 2014 was the driest in California history since record keeping began.
2020 - 2022	January and February 2021 were dry to record dry in several areas (central CA and Northern CA-NV). The past three water years combined- was California's driest such period on record.

The period between late 2011 and 2021 was the driest in California history since record keeping began. In May 2015, a statewide poll conducted by Field Poll found that two out of three respondents agreed that it should be mandated for water agencies to reduce water consumption by 25%.

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

Approximately 102 million trees in California died from the 2011 – 2016 drought of which 62 million died in 2016 alone. By the end of 2016, 30% of California had emerged from the

drought, mainly in the northern half of the state, while 40% of the state remained in the extreme or exceptional drought levels. Heavy rains in January 2017 were expected to have a significant benefit to the State's northern water reserves, despite widespread power outages and erosional damage in the wake of the deluge.

The winter of 2022/2023 turned out to be the wettest on record in California, surpassing the previous record set in 1982–83. Governor Newsom declared an official end to the drought in April 2023. All 58 counties are listed in the Governors severe drought impact. The winter of 2022 has had more rainfall and snow in California than the last 20 years alone.

Within the 2018-2023 timeframe, there are no federal and/or state declarations declared for California Climate Change Induced Drought within the JBWD service area.

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

The entire planning area is equally at risk of this hazard. The majority of drought impacts, however, are not structural but societal in nature. A drought's impact on society, and thus the JBWD's service area, result from the interplay between a natural event and the demand people place on water supply. JBWD is the entity in charge of supplying potable and non-potable water within its service area; therefore, it would be greatly impacted, both fiscally and politically, if it was unable to provide a reliable water supply due to drought conditions. Economically, water restrictions imposed during drought periods could result in lost revenue for JBWD.

4.3.3 FLOOD

Probability: (50-75%) Likely – Historical flood data for JBWD and its region indicate there have been at least 2 significant floods within the last 5 years. This equates to a flood every 2.5 years on average or a 40 percent chance of a flood in any given year. Based on this data JBWD determined the future flood occurrence within their boundaries continue to be likely.

Impact: Critical

Priority: Likely

* This section looks at all the hazards affecting the District within its boundaries and identified by the Planning Team.

General Definition: An unusually heavy rain in a concentrated area, over a short or long period of time that collects on the ground in low areas of the land. Flooding occurs when there are large amounts of rainfall in areas where the water runs off to lower elevations. Flooding is a very frequent, dangerous, and costly hazard. Globally, it accounts for 40 percent of all natural disasters and results in an average of over 6,500 deaths annually. In the U.S., flooding results in an average of 86 deaths annually. Nearly 90 percent of all presidential disaster declarations result from natural events where flooding was a major component. On average, flooding causes more than $2 billion in property damage each year in the United States. Floods cause utility damage and outages, infrastructure damage, structural damage to buildings, crop loss, decreased land values and impede travel.

Flooding is the most common environmental hazard, due to the widespread geographical distribution of valleys and coastal areas, and the population density in these areas. The severity of a flooding event is typically determined by a combination of several major factors, including stream and river basin topography and physiography; precipitation and weather patterns; recent soil moisture conditions and the degree of vegetative clearing and impervious surface. Flooding events can be brought on by severe (heavy) rain.

JBWD is not a member of NFIP. NFIP members are Cities and County Governments that enforce building codes and permits, and have authority over construction, planning, zoning, and land use, where JBWD does not have authority over any of these.

Probability: The probability of increased flooding is high due to wildfires exacerbating flooding conditions. Wildfires can exacerbate flooding conditions, when infiltration is affected, and limited vegetation is in place. As wildfires probability increases so will flooding, this is due to dry conditions and dried foliage. While the recent drought conditions have resulted in a lack of rain events, the potential for future flooding still exists.

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

Climate Change Impacts:

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

Population– Population vulnerability may increase as a result of climate change impacts on the flood hazard. Runoff patterns may change, resulting in flooding in areas where it has not previously occurred.

Critical facilities – All critical facility exposure and vulnerability may increase as a result of climate change impacts on the flood hazard.

Vulnerability & Impact: Underserved and vulnerable populations they serve include people who are socioeconomically disadvantaged; people with limited English proficiency; geographically isolated or educationally disenfranchised people; people of color as well as those of ethnic and national origin minorities; women and children; individuals with disabilities and others with access and functional needs; and seniors. Those that may live under bridges, in tents or makeshift housing along waterways. The socially vulnerable populations are most susceptible based on many factors, including how the people respond to the lack of financial ability to purchase supplies. Food, clothing, safe housing may be manageable for only short periods of time and then fall into extreme poverty. With lack of resources and the ability to navigate special needs in an emergency, or to manage obtaining adequate food, housing, food clothing or medical treatment.

In flooding conditions vulnerably populations may not be able to find adequate safe potable water supplies for drinking, cooking, or hygiene needs. Flooding and dangers associated with the flood hazard can lead to vulnerable populations living in waterways, flood control channels, and adjacent to creeks and waterways losing possessions and to further displacement. It can further isolate these vulnerable populations and limit access to local, state, and federal resources.

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

Table 10. Flood Zone Replacement Cost

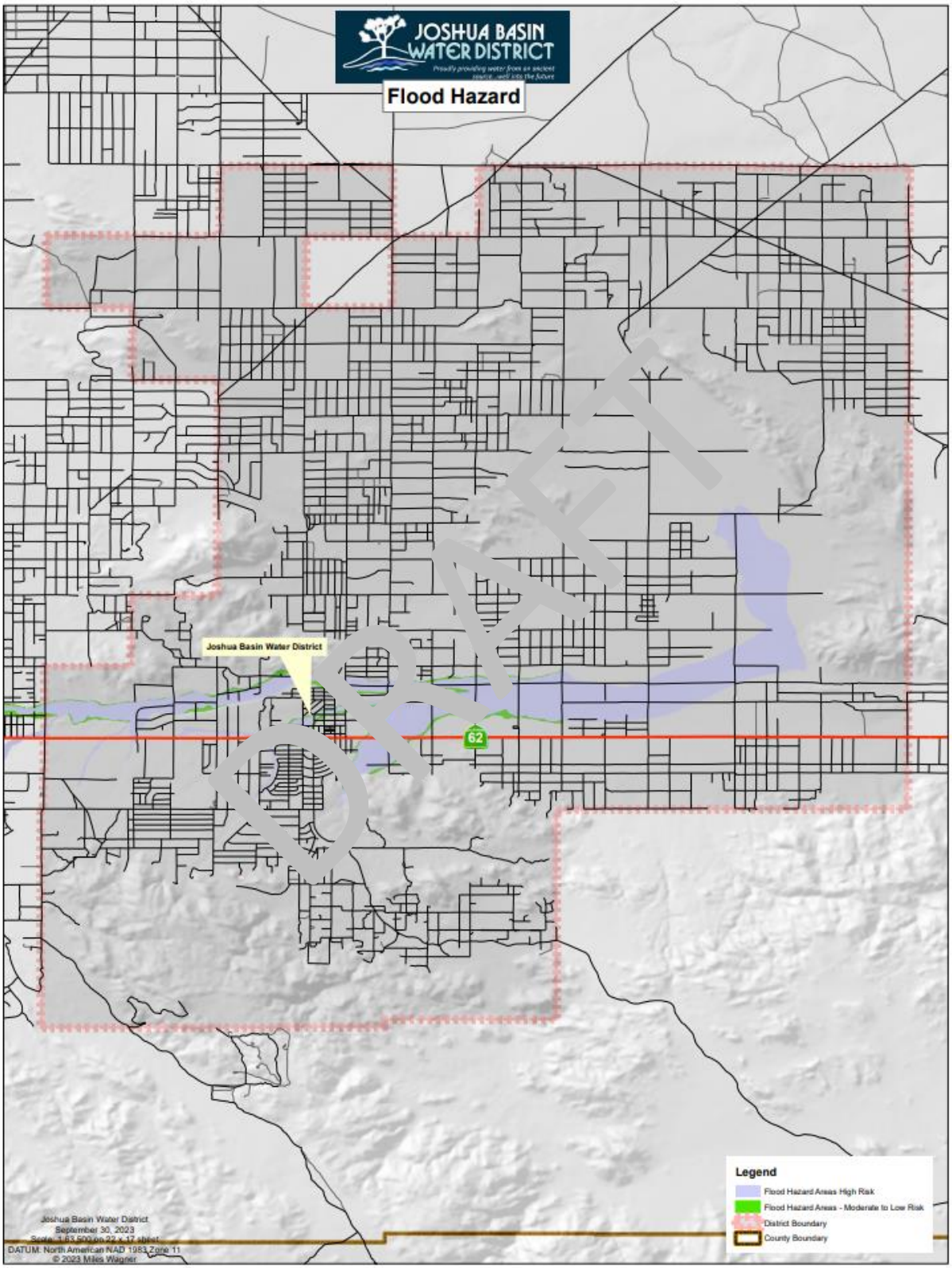
JBWD 100/500 Year Flood Zones	Replacement Value
500 Year Flood Zone	
JBWD - All Critical Assets	$200 Million
100 Year Flood Zone	
JBWD - All Critical Assets	$100 Million

Description: Flooding is common in the District's service area; severe rainstorms have been known to flood surrounding areas within the service area. This has not affected operations; 100-year and 500-year flood maps show potential inundation in the area. Flooding has caused damage to pipelines in the past, but there have been no interruptions in service in the last 5 years.

Within the 2018-2023 timeframe, there were two federal and/or state declarations declared for flood within the JBWD service area. Notice is hereby given that, in a letter dated January 9, 2023 (EM-3591-CA) and March 16, 2023 (EM-3558-CA), the President issued an emergency declaration under the authority of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, 42 U.S.C. 5121-5207 (the Stafford Act), as follows:

"I have determined that the emergency conditions in certain areas of the State of California resulting from severe winter storms, flooding, and mudslides beginning on January 8, 2023, and continuing, are of sufficient severity and magnitude to warrant an emergency declaration under the Robert T. Stafford Disaster Relief and Emergency Assistance Act, 42 U.S.C. 5121 et seq. ("the Stafford Act"). Therefore, I declare that such an emergency exists in the State of California…"

Figure 9. Flood Zones within JBWD Service Area.



Impact Statement:

There is an increase of impact from flooding that can be caused by climate change. Climate change increases overall flooding probability and can increase impact to the service area. Flooding can cause displacement which would lead to changes in population patterns throughout their service area. JBWD has no jurisdiction over land use, development, and zoning especially during a state and/or federal declared disaster.

Flooding can result in a variety of impacts, such as death and injury, asset damage, inability to access facilities or assets and road closures. Normal operations may be interrupted due to flooding. Some impacts from flooding include:

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

4.3.4 CYBER SECURITY

Probability: (50-75%) Likely – Cyber data for JBWD and its region indicate there have been several attempted attacks to the District within the last 5 years. This equates to a cyber-attack every year on average or a 50 percent chance of a cyberattack in any given year. Based on this data JBWD determined the future cyberattack occurrence within their boundaries continues to be likely.

Impact: Critical

Priority: Likely

* This section looks at all the hazards affecting the District within its boundaries and were identified by the Planning Team.

General Definition: An attack, via cyberspace, targeting an enterprise's use of cyberspace for the purpose of disrupting, disabling, destroying, or maliciously controlling a computing

environment/infrastructure; or destroying the integrity of the data or stealing controlled information.

Climate Change Impacts:

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

- **Population**– Population exposure and vulnerability to cyber security are unlikely to increase as a result of climate change.
- **Critical facilities –** All critical facilities exposure and vulnerability are likely to increase as a result of climate change.

Vulnerability: The vulnerable population is not affected by a cyber-attack on the water infrastructure, as a water district can manually operate the water system, if needed.

Description: Outside sources gaining access to electronic controls and processes to take over all electronic devices. To control, gain access to critical records, information, and confidential data.

Impact Statement: There are several types of cyber attacks that can occur to the District and water and wastewater control systems. Listed below are a few threats that the District is susceptible to:

- Malware
- Denial-of-Service (DoS) Attacks
- Phishing
- Spoofing
- Identity-Based Attacks
- Code Injection Attacks
- Supply Chain Attacks
- Insider Threats

4.3.5 WILDFIRE

Probability: (25-50%) Somewhat Likely – Historical wildfire data for JBWD and its region indicate there have been at least 1 significant wildfire within the last 5 years. This equates to a wildfire within their service area every 5 years on average or a 20 percent chance of wildfire in any given year. Based on this data JBWD determined the future wildfire occurrence within their boundaries continues to be somewhat likely.

Impact: Limited

Priority: Somewhat Likely

* This section looks at all the hazards affecting the District within its boundaries and identified by the Planning Team.

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

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

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

Wildfire probability depends on local weather conditions, outdoor activities such as camping, debris burning, and construction, and the degree of public cooperation with fire prevention measures. Drought conditions and other natural hazards (such as tornadoes, severe winds, etc.) increase the probability of wildfires by producing fuel in both urban and rural settings. Cyclical climate events, such as El Niño-La Niña, can also have a dramatic effect on the risk of wildfires. Fewer fires are typically seen during El Niño (when more rain is present) and larger, more frequent fires are typical during La Nina events.

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

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

Probability: The probability of increased wildfire is high due to drought exacerbating dry conditions. As wildfires probability increases so will flooding, this is due to dry conditions and dried foliage. Major wildfires are known to contribute to major flooding, as the vegetation is burned away.

Climate Change Impacts:

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

Population– Population vulnerability may increase as a result of climate change impacts on the wildfire hazard. Evacuations and displacement may occur due to wildfire risks and safety of the public.

Critical facilities – All critical facility exposure and vulnerability may increase as a result of climate change impacts on the wildfire hazard.

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

JBWD service area is not in a wildfire zone as seen in Figure 11. This means that none of the buildings, infrastructure and critical facilities are vulnerable to wildfire hazard.

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

California is very susceptible to wildfires, especially during the fall and summer months. Southern California has the Santa Anna Winds that develop mostly in the late summer and fall. These winds are known for their high speeds and drying effect, which turn the natural grasses brown and dry the southwest natural vegetation. These winds are also capable of blowing down power lines that are known to start fires in the mountains and hills. The fires are driven by the

high winds and the fires become large events that destroy large areas within cities and towns and cause millions of dollars in damage to property and loss of life.

Wildfires are not expected to affect the water infrastructure system because most of the infrastructure is underground and constructed of non-flammable materials. In addition, the local vegetation is such that wildfires are not expected to occur within the District boundaries.

There are issues from wildfires that affect the District. During large wildfires, firefighting personnel may draw large amounts of water and strain the water supply system. The fires also burn though electrical power lines, and the District can lose power in critical areas. Without power the District cannot pump groundwater from the aquifer or pump additional water to needed areas.

Figure 10. Wildfire Map with JBWD Boundaries

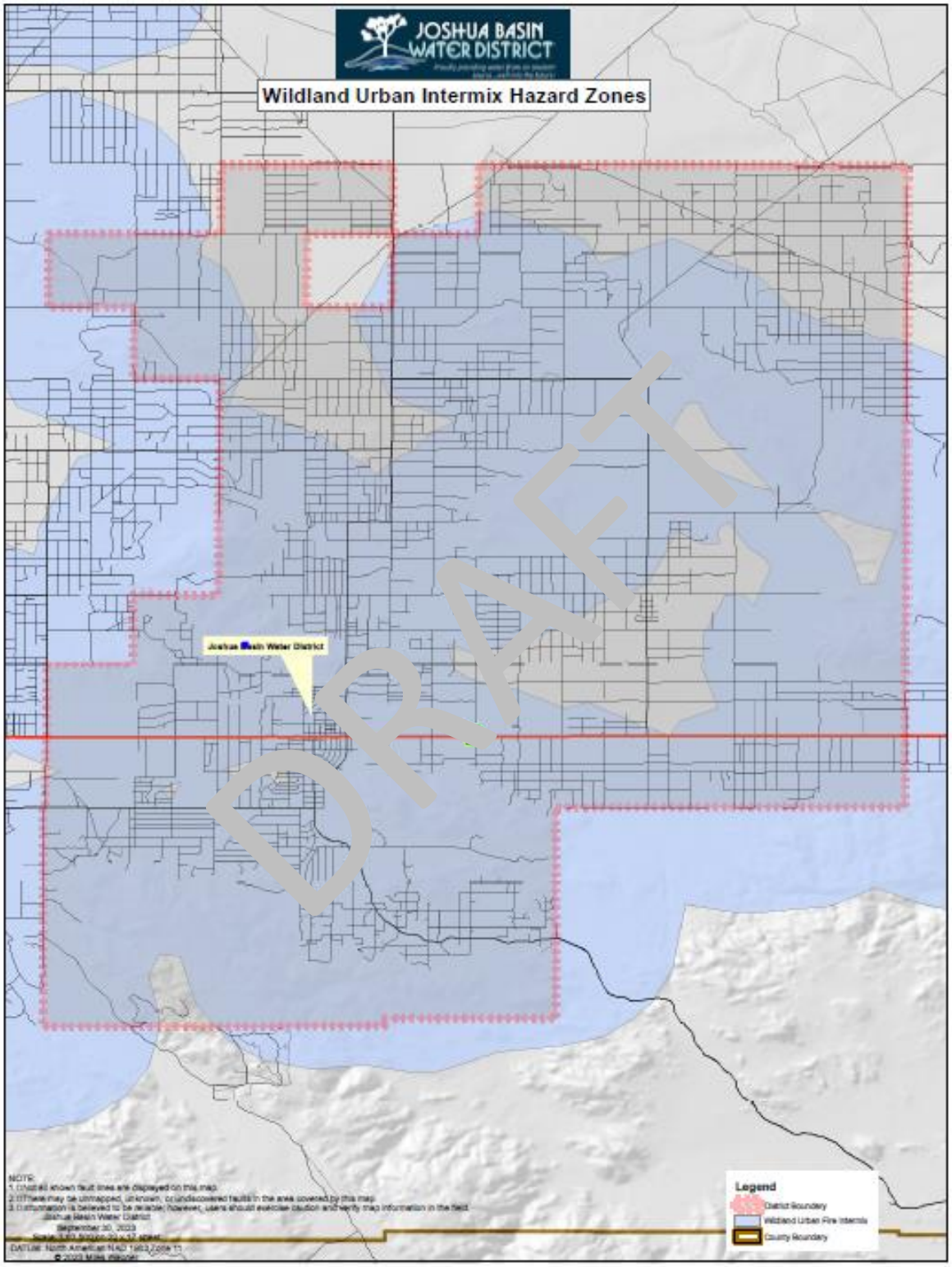


Table 11. Wildfire History Near JBWD

Fire Name	Date	Acres Burned
York Fire	August 1, 2023	93,078

Within the 2019-2024 timeframe, there were no federal and/or state declarations declared for Wildfire within the JBWD service area.

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

In addition, wildfires also have the potential to result in indirect, or cascading, hazards to JBWD. Wildfires can cause power outages if utility lines are damaged, and burned areas are much more susceptible to landslides, as demonstrated by the 2018 mudflows in Montecito, CA.

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

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

SECTION 5. COMMUNITY CAPABILITY ASSESSMENT

5.1 INTRODUCTIONS

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

The capability assessment has two components:

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

5.2 EMERGENCY MANAGEMENT

Joshua Basin Water District (JBWD/District) is a water agency. Today, the District is responsible for serving approximately 9,814 residents over 96 square miles in western San Bernardino County.

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

CalWARN holds workshops twice a year for water agency members. CalWARN has been planning public outreach, so the public has a better understanding of hazard mitigation planning in their communities. These workshops promote mitigation and how to prevent the impacts of hazards on the utility's infrastructure. CalWARN has access to utility leaders and their past experiences during emergencies and lessons learned on what they should have done differently. Sharing ideas and experiences is key to understanding mitigation in the future.

The District currently employs 30 full-time and one part-time employee and by joining CalWARN, the District has the potential to have hundreds of mutual aid workers at its disposal within hours of an emergency. The pressure zones, reservoirs, wells, and maintenance work done at Hi-Desert Medical Center Waste Water Treatment Plant facility are all operated by certified operators and maintained by a variety of certified technical disciplines. In addition, the District agrees with other water districts to support each other during an emergency by offering both labor and equipment to the incident.

The General Manager has over 7 years of experience in water. She has been with JBWD for 7 years. Throughout her career with the District, she has been mitigating earthquake, flood, and drought impacts that face the utility.

Emergency Response Plan (ERP): An emergency response plan outlines responsibility and how resources are deployed during and following an emergency or disaster. The primary objective of

the plan is to guide the identification of potential emergencies, a timely and effective response, and the protection of the health and safety of the community. The ERP guides the process when an emergency occurs, including being a blueprint for the general operations during a disaster, distributing and managing responsibilities among authorities, and identifying liability.

JBWD Emergency Response Plan was last revised August 2023 and details how the District will respond to various emergencies and disasters. JBWD must be prepared to respond to a variety of threats that require emergency actions, including:

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

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

Emergency Operations Center (EOC): An EOC provides a location, on or off-site, from which an agency coordinates a disaster response operation. In times of non-disasters, EOCs typically provide a centralized hub for communication and security oversight. JBWD administrative building and operations yard has a potential for two EOCs, one being the primary event center and secondary would be the corporate yard.

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

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

5.3 PLANNING AND REGULATORY CAPABILITY

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

The Urban Water Management and Planning Act requires water suppliers to estimate water demands and available water supplies. JBWD updated Urban Water Management Plan (UWMP) was completed in September 2022. UWMPs are required to evaluate the adequacy of water

supplies, including projections of 5, 10, and 20 years. These plans are also required to include impacts of climate change and water shortage contingency planning for dealing with shortages, including a catastrophic supply interruption.

The Water Supply Reliability Assessment is a section of the plan that aims to understand the ability to satisfy the water demand during different types of years (e.g., years with average rainfall versus drier years).

Water Shortage Contingency Plan (WSCP)

Certain elements of the WSCP are required by California Water Code (Water Code), including five specific response actions that align with six standard water shortage levels based on JBWD's water supply conditions and shortages resulting from catastrophic supply interruptions, JBWD WSCP was last updated September 2022. The WSCP also contains JBWD procedures for conducting an annual water supply and demand assessment, which is the written decision-making process for determining supply reliability each year, along with the data and methods used to evaluate reliability.

The WSCP is implemented through a series of ordinances of water use restriction in different stages. For instance, stage 1 requires a 10% water use restriction, and stage 5 requires greater than 50% water use restriction. The main method to reduce water use is by using water budget-based tiered rate structures and penalties for misuse.

UWMPs are intended to be integrated with other urban planning requirements and management plans. Some of these plans include Water Master Plans, Recycled Water Master Plans, Integrated Resource Plans, Integrated Regional Water Management Plans, Groundwater Management Plans, Emergency Response Plans, and others.

5.4 EXISTING PLANS

The following emergency related plans apply as appropriate:

- CalWARN Emergency Operations Plan – Updated every 10 years
- The District's Illness Injury Prevention Plan (IIPP) – Updated annually
- The District's Urban Water Master Plan – Updated every 10 years
- Water Shortage Contingency Plan (WSCP)– Updated every 5 years
- San Bernardino County Fire Master Plan- Updated annually
- San Bernardino County Flood Master Plan- Updated annually
- USEPA PSPS SOP for Public Water Systems - Updated every 5 years

5.5 MITIGATION PROGRAMS

JBWD employees have experience with past hazard mitigation and hazard planning and can further enhance their hazard mitigation skills by participating in training offered by other agencies or regional governments.

The District offers incentives to improve water use efficiency. These incentives include a high efficiency hose nozzle, low flow shower heads, conservation educational classes and water surveys for leak detections. To promote voluntary conservation, the District has initiated a public awareness and education plan consisting of the following:

- A citizens advisory committee is used to inform and educate constituents about water issues, including water supply conditions and water use efficiency.
- The District stores disaster supply storage sheds at their corporate yard and District office for employees during an emergency. The supply shed is complete with cots, chairs, food bars, MREs, first aid kits, light sticks, batteries, blankets, personal sanitation kits, water, flashlights, etc.
- The District's Human Resources Department develops and maintains a safety manuals and an emergency response manual that is specific to the facility where each department works.
- The District's Business Emergency Plan is updated annually for both local and county fire hazardous materials departments.
- The District plans on starting mitigation outreach via citizens advisory committee and social media such as Facebook.

5.6 FISCAL RESOURCES

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

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

- New connection fees from industrial users
- State and Federal grants

Through the California Department of Water Resources, local grants and/or loans are available for water conservation, groundwater management, studies, and activities to enhance local water supply quality and reliability. Project eligibility depends on the type of organization(s) applying and participating in the project, as well as the specific type of project. More than one grant or loan may be appropriate for a proposed activity. Completing the LHMP will facilitate and obtain

grant funding in the future. For instance, BRIC, HMGP, or FMA grants. Grant opportunities will be reviewed each year to ensure there will be funding available for specific mitigation items.

5.7 CAPABILITIES ASSESSMENT

A Capability Assessment examines JBWD's capabilities to detect any existing gaps or weaknesses within ongoing activities that could hinder proposed mitigation activities and possibly exacerbate community hazard vulnerability. The conclusions of the Risk Assessment and Capability Assessment serve as the foundation for the development of a meaningful hazard mitigation strategy. The list below outlines key capabilities JBWD will consider in the Mitigation Strategy.

1. **Coordinate** with the San Bernardino County Emergency Management to achieve interoperability of Web EOC software and representations in appropriate EOCs;
2. **Provide** necessary staffing and software for ongoing maintenance of asset management program data;
3. **Add funding** for hazard mitigation actions to the District's Capital Improvement Program planning efforts
4. **Incorporate** projects from the capital improvement program into the mitigation strategy (and vice versa).
5. **Expand** Public outreach and education on emergency management. This allows JBWD to form a plan to continually educate their customers regarding natural hazards and the effects these hazards have on drinking water systems. They educate the residents on the importance of mitigation these hazards to build a more resilient community.
6. **Broaden** staff training: JBWD employees have experience with past hazard mitigation and hazard planning and can improve their hazard mitigation skills by participating in training offered by other agencies or other regional governments. This plan should begin with educating grade 1-12 in the local schools and on JBWD website.

SECTION 6. MITIGATION STRATEGIES

6.1 OVERVIEW

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

Mitigation measures are categorized generally for all hazards and specifically for the four high-risk hazards that were extensively examined in the risk assessment section. These hazards include earthquakes, climate change induced drought, flooding, and cyber security.

6.2 MITIGATION GOALS, OBJECTIVES, AND PROJECTS

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

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

- Continually improve the community's understanding of potential impacts due to hazards and the measures needed to protect lives and critical infrastructure.
- JBWD communications should provide public outreach to inform the public of the hazards identified to the drinking water system in emergencies - how to conserve water in the event of a disaster and how to obtain drinking water when water may not be available.
- Continually provide State and Local Agencies with updated information about hazards, vulnerabilities, and mitigation measures at JBWD.
- Review and verify that the District's owned and operated infrastructure meets the minimum standards for safety.
- Review the District's facilities and developments in high-risk areas to verify that these areas are appropriately protected from potential hazards.
- Identify and mitigate imminent threats to life safety and facility damage.
- The four high profile hazards for JBWD are earthquakes, climate change induced drought, flooding, and cyber security. While other hazards were profiled in previous sections, JBWD priority and focus for the mitigation projects will be for the four high profile hazards.

From 2018 LHMP, the table below are statuses of completed mitigation actions.

Table 12 Completed Mitigation Actions from 2018 LHMP

Title/Mitigation Action	Completed (Year)
District Office/Shop – Security Camera Upgrade	2019
SCADA Server – Security Cameras	2019
Well 14 – Complete rehab	2022
D-1-1 Booster Station – Rehab	2024

6.3 EARTHQUAKE

Goal: To protect life and property in Joshua Basin Water District in the event of an earthquake.

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

Mitigation Projects:

Below you will find the priority of the project, the department that will be responsible for this action, and the source of funding. Further analysis will be required for each mitigation project to provide a more accurate cost estimate when ready to implement. All the actions listed for each hazard were the only actions considered by JBWD. The identified projects and current costs estimate include:

- Bolt down water reservoir facilities. Director of Operations or General Manager. (5 Years) $1.5 million. HMGP, BRIC and CIP. High Priority.
- Seismic shut-off valves on all reservoirs. Director of Operations or General Manager. (5 Years) $1.5 million. HMGP, BRIC and CIP. High Priority.
- Flex couplings on all wells and reservoir pipelines. Director of Operations or General Manager. (5 Years) $1.8 million. HMGP, BRIC and CIP. High Priority.
- Protect critical facilities and infrastructures. Tying down equipment, strengthening buildings, training on following the emergency response plan, and opening an EOC. $1.5 Million. Director of Operations (5 Years). HMGP, BRIC and CIP. High Priority.
- Conduct annual employee training for responding to an earthquake. This includes tabletop exercises, boots on the ground exercises and SIMS/NIMS training. $30,000(*Annually*) Safety and HR Department. CIP. High Priority.

6.4 CLIMATE CHANGE INDUCED DROUGHT

Goal: To protect life and property in Joshua Basin Water District in the event of a drought.

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

Mitigation Projects:

Below you will find the priority of the project, the department that will be responsible for this action, and the source of funding. Further analysis will be required for each mitigation project to provide a more accurate cost estimate when ready to implement. All the actions listed for each hazard were the only actions considered by JBWD. The identified projects and current costs estimates include:

- Improve operational efficiency system leaks and increase water pumping capabilities. Enlarge intertie with Hi-Desert Water District. Improving pipelines, collection systems and leak surveys. Looking for water loss in the system etc. $2 Million (5 Years) Director of Operations HMGP, BRIC, CIP. High Priority.

6.5 FLOOD

Goal: To protect life and property in Joshua Basin Water District in the event of flooding.

JBWD is **not** a participant under the National Flood Insurance Program (NFIP).

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

Mitigation Projects:

Below you will find the priority of the project, the department that will be responsible for this action, and the source of funding. Further analysis will be required for each mitigation project to provide a more accurate cost estimate when ready to implement. All the actions listed for each hazard were the only actions considered by JBWD. The identified projects and current costs estimates include:

- Improve existing facilities and construct new facilities to mitigate flooding (*5 Years*) $5 Million. Director of Operations. BRIC, HMGP.
- Install stormwater drainage. Assessment of access roadways and access points leading to facilities and install bridges crossing dry creek beds in order to access wells and reservoirs when flooded. (5 years). $4.5 Million. BRIC, FMA, HMGP, CIP. Director of Operations.

6.6 WILDFIRE

Goal: To protect life and property in Joshua Basin Water District in the event of a wildfire.

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

Mitigation Projects:

Below you will find the priority of the project department that will be responsible for this action, and the source of funding. Further analysis will be required for each mitigation project to provide a more accurate cost estimate when ready to implement. All the actions listed for each hazard were the only actions considered by JBWD. The identified projects and current costs estimate include:

- Remove brush and trees from around facilities. $50,000 (Annual). High Priority. Director of Operations. CIP.
- Recoat inside reservoirs with fire retardant coating. $1.5 Million (5 years). Medium Priority. Director of Operations. HMGP and BRIC.
- Remove old wood electrical panels and install into brick buildings, increasing fire resiliency and security. $2.5 Million. (5 Years). High Priority. Director of Operations. HMGP, CIP and BRIC.

6.7 CYBER SECURITY

Goal: To protect life and property in Joshua Basin Water District in the event of a cyber security attack.

Description: *The goal is to avoid injury, loss of life, and damage to property.* A cyber-attack can be in many forms such as malware, phishing, and insider threats. It is up to the District to train and protect from external or internal infiltration. As an added security measure, the District will not share its cyber security planning within this LHMP.

Mitigation Projects:

Below you will find the priority of the project department that will be responsible for this action, and the source of funding. Further analysis will be required for each mitigation project to provide a more accurate cost estimate when ready to implement. All the actions listed for each hazard were the only actions considered by JBWD. The identified projects and current costs estimate include:

- SCADA Standards Revision. Update and modernize the current SCADA system. $25,000(2 Years). High Priority. Director of Operations. HMGP and BRIC.
- District-wide Video Surveillance Improvement. Update, install and modernize video cameras and recording devices. $1 million. High Priority. (5 Years). IT Department.

HMGP and BRIC.

6.8 MITIGATION PRIORITIES

During the development of the risk assessment for JBWD, the Planning Team proposed and discussed alternative mitigation goals, objectives, and specific mitigation measures that JBWD should undertake to reduce the risk from the five high risk hazards facing the District. Priorities from the 2018 LHMP have not changed for the 2023 plan.

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

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

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

Earthquakes, climate change induced drought, flooding, and cyber security mitigation actions are identified and assigned a priority according to their importance, cost, funding availability, degree that project planning has been completed, and the anticipated time to implement the measures.

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

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

6.9 IMPLEMENTATION STRATEGY

The implementation strategy is intended to successfully mitigate the hazards identified in this plan within a reasonable amount of time. JBWD is currently operating within its annual budget and has been fortunate that the recession of the past ten years didn't cause major issues with the budget or revenue. JBWD revenues have remained strong throughout the recession, and capital

improvement projects have remained a priority. JBWD staff will review the Mitigation Plan each year before developing the next year's fiscal budget. The plan will also be reviewed by the Board of Directors for items to be included in the new fiscal budget. JBWD staff will also look for ways to obtain Hazard Mitigation Grants each year to off-set the impacts on the fiscal budget and to show some relief for the residents. The following equations below is the cost benefit analysis equation that is used for ensuring that the cost benefit to the District is within FEMA guidelines. When completing a cost benefit analysis with FEMA the formula is all in electronic form but resembles the formula below.

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

Mitigation Projects Funding Source

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

Timeframe

Over the next five years, the District will incorporate mitigation into all capital improvement projects that the District undertakes. The previous 2013 LHMP was incorporated in the CIP and into any other planning mechanisms.

The District will apply for mitigation grants as the opportunities become available in the State of California, County of San Bernardino, and any other. The District will consider all mitigation items during the review of the Ten Year Capital Improvement Plan and during the annual budget workshops.

SECTION 7. PLAN MAINTENANCE

7.1 MONITORING, EVALUATING, AND UPDATING THE PLAN

The General Manager or his/her assignee will evaluate the plan on an annual basis and consider whether new hazards have emerged, community vulnerability has changed, and goals and objectives are still relevant to current conditions. This will be done by evaluating and removing completed mitigation actions and adding mitigation projects to the current LHMP. The LHMP will be reviewed as part of the Annual Budget Planning in the spring of each year and whenever there are new infrastructure updates within JBWD. The General Manager or his/her assignee will ensure the LHMP is reviewed annually, and any items that have been mitigated will be removed from the plan. At that time, staff and elected Board of Directors will review funding and capital improvement projects in the next fiscal year's budget. Annually, the General Manager or his/her assignee and the Chief Financial Officer will review funding and determine the projects to be included in the next fiscal year's Capital Improvement Plan (CIP) budget. The General Manager or his/her assignee will include the LHMP in all budget planning and grant planning meetings. This will allow open discussion, evaluation, and assessment of the LHMP to achieve goals, allowing the addition and removal of mitigated items.

The General Manager or his/her assignee leads a full review of the LHMP at a three and a half-year interval in the same manner as the initial LHMP. At this time, progress in reaching mitigation goals, assessment of new and existing hazards, using the new revised FEMA review tool, cross referencing hazards from the County and development new mitigation strategies and goals will be addressed by the Planning Team headed by the Operations Department that will include the General Manager or his/her assignee.

The consumers within Joshua Basin Water District and the District's personnel will be asked to participate in the LHMP update process. There has been substantial development within the service area in the last 5 years. In the 2018 LHMP the plan was incorporated into planning documents for updates on water mains.

7.2 IMPLEMENTATION THROUGH EXISTING PROGRAMS

Once the State of California OES and FEMA approve the LHMP, JBWD will incorporate the LHMP into capital improvement projects, capital replacement program, building design, and any updates or repairs to the water distribution system. JBWD will submit a Notice of Intent to the State of California to help facilitate opportunities in obtaining FEMA and State funding to mitigate hazards within the service area. The General Manager or his/her assignee will be responsible for implementing the LHMP and working toward the LHMP recommended goals and objectives are met. The General Manager or his/her assignee will be responsible for placing the LHMP on the District's website and incorporating the LHMP into the annual budget planning meetings. The General Manager or his/her assignee will verify that the LHMP is updated and

rewritten over a 5-year cycle. JBWD will start the update process one and a half years before the expiration date on this document.

7.3 CONTINUED PUBLIC INVOLVEMENT

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

The plan is reviewed annually, JBWD Operations Department and General Manager will conduct outreach with the nonprofit organizations, including community-based organizations to represent the community's input into the updates. JBWD can also learn how priorities in the communities are changing or have changed since the last update by conducting outreach to the public on construction, infrastructure improvements and overall abilities.

APPENDIX A

Planning Team Meeting Matrix

Table 13. Meeting Matrix

Meeting Matrix/ Attendees	10/24/23 Introduction meeting (In-Person)	11/27/23 Working Session (In-Person)	12/19/2023 Working Session (In-Person)	1/9/23 Citizens Advisory Committee Meeting Public Review Session (In-Person)	1/15/24 Final Planning Meeting (Zoom)
Sarah Johnson	X	X	X	X	X
Lisa Thompson	X	X	X	X	X
Jeremiah Nazario	X	X	X	X	X
Scott Carpenter	X		X		X
David Shook	X	X	X	X	X
Gary Sturdivan	X	X	X	X	X
Ray Kolisz	X	X	X	X	X
Mike Dorame	X	X		X	
Josh Gillman	X	X	X	X	

APPENDIX B

Public Outreach

Figure 11. JBWD Public Outreach Email

Figure 12. JBWD Website for LHMP

APPENDIX C

Public Comments