CAMROSA WATER DISTRICT
BUILDING WATER SELF-RELIANCE

NOTICE OF SPECIAL BOARD MEETING

BOARD WORKSHOP

NOTICE IS HEREBY GIVEN that the Camrosa Water District Board of Directors will conduct a Board Workshop on:

--- Friday, July 25, 2025 at 9:00am ---
at
Camrosa Water District Office
7385 Santa Rosa Rd · Camarillo, CA. 93012

This workshop is open for the public to attend. The Board will discuss strategies and establish long-term goals and objectives for the Camrosa Water District.

Norman Huff
Secretary / General Manager

7385 Santa Rosa Road ▪ Camarillo, CA 93012-9284
Phone: (805) 482-4677 ▪ FAX: (805) 987-4797
Website: www.camrosa.com

CAMROSA WATER DISTRICT
BUILDING WATER SELF-RELIANCE

Board Agenda

Special Meeting

Friday, July 25, 2025
Camrosa Board Room
7385 Santa Rosa Rd · Camarillo, CA 93012
9:00 A.M.

Call to Order

Public Comments

At this time, the public may address the Board on any item not appearing on the agenda which is subject to the jurisdiction of the Board. Persons wishing to address the Board should fill out a white comment card and submit it to the Board President prior to the meeting. All comments are subject to a 5-minute time limit.

Primary Agenda

1. **Board Workshop**

   Objective: Discuss strategies and long-term goals and objectives for the Camrosa Water District.

   Action Required: No action required.

Comments by General Manager; Comments by Directors; Adjournment

Upon request, this agenda will be made available in appropriate alternative formats to persons with disabilities, as required by Section 202 of the Americans with Disabilities Act of 1990. Any person with a disability who requires a modification or accommodation to participate in a meeting should direct such request to Donnie Alexander at (805) 482-8514 at least 48 hours before the meeting, if possible.

CAMROSA WATER DISTRICT
BUILDING WATER SELF-RELIANCE

Board Memorandum

July 25, 2025

To: Board of Directors

From: Norman Huff, General Manager

Subject: **Master Plan Workshop, July 2025**

Objectives:

1) Provide the Board with a summary of the August 2024 Workshop.
2) Facilitate the Board's discussion regarding key Integrated Master Plan elements.
3) Provide the Board with a detailed update on the progress of Master Plan initiatives and projects.

Action Required: No action is necessary; for information and discussion only.

Workshop Outline:

1. Introductions
    - Camrosa
    - Woodard & Curran
2. Review of the August 2024 Workshop
    - The Water Supply Alternative phased approach
    - Potable System Storage
    - Prioritized Rehabilitation or Replacement of Aging Infrastructure
    - "No regrets" action plan going forward
3. Key Integrated Master Plan Components and Current Implementation Schedule
    - Integrated Master Plan Document
        - Schedule, background, draft Table of Contents, and objectives
        - DISCUSSION - Evaluation Frameworks
        - DISCUSSION - Risks & Uncertainties
        - DISCUSSION - Level of Service Goals Criteria
    - Phased Approach to Water Supply Independence
        - Progress Report

- Prioritized Rehabilitation or Replacement of Aging Infrastructure
    - Progress Report
- Water Resource Allocation Policy Development, Adoption, & Application
    - Progress Report
- Fiscal Feasibility Analysis & Funding Source Identification
    - Progress Report
- Robust Community Outreach for Master Plan Input & Feedback
    - Progress Report

4. Next Steps
    - Next Workshops
        - Water Resources Allocation Policy (WRAP) - Sept.
        - Review Draft Integrated Master Plan document - Dec.
        - Review Outreach Feedback - Jan. 2026
        - Review Conejo RO PDR Draft - Feb. 2026

Attachments (also available on SharePoint):

- Draft Integrated Master Plan Implementation Schedules
- Integrated Master Plan Draft Table of Contents
- W&C Risk Registry & TM
- Draft Levels of Service Goals

Reference Documents Available on SharePoint:

- FY 2022-23 Strategic Plan
- Near-Term CIP for Repair, Rehab, and Replacement Needs TM
- Water Resources Planning Analysis TM
- Potable System Storage Analysis TM
- Grant Opportunities Research TM
- Draft Community Outreach RFP
- Conejo RO PDR Final Scope
- PV Well #3 Draft PDR
- Financial Analysis Services (Clean Energy Capital) Scope
- Master Plan Document Development Scope (W&C)
- Master Plan Program Manager RFQ
- Master Plan Outreach Outline

DRAFT INTEGRATED MASTER PLAN IMPLEMENTATION SCHEDULE
CAMROSA WATER DISTRICT
July 18, 2025

	DESCRIPTION	FY 24-25	FY25-26	FY26-27	FY27-28	FY28-29	FY29-30
		J F M A M J	J A S O N D J F M A M J	J A S O N D J F M A M J	J A S O N D J F M A M J	J A S O N D J F M A M J	J A S O N D J F M A M J
	INITIATIVES						
1	Integrated Master Plan Document (W&C)		3, 5	9	9	9	9
2	Water Resources Allocation Policy (CWD)						
3	Program Manager Consultant (TBD)						
4	Cost/Financial Analysis - Evaluate Funding Opportunities (CEC)						
5	Rate Study (TBD)			7			
6	Financial Implementation - Bonds, Grants, etc. (TBD)						
7	Outreach Master Plan (TBD)		2				
8	Programmatic EIR (TBD)						
	WATER SUPPLY PROJECTS						
9	Fe/Mn Treatment PV Well #2 (Lynnwood) (Filanc)						
10	PV Well #3 (Valencia) PDR (MNS) and Environmental (Meridian)		1				
11	PV Well #3 Permitting/Drill/Test (TBD)		4				
12	PV Well #3 Conveyance -or- Treatment (TBD)						
13	CMWD SMP Extension (TBD)						
14	Conejo GAC Expansion (TBD)						
15	Conejo RO Plant (PDR - B&V)		6				
16	CMWD Regional Exchange Framework (Wheeling & Banking)		6A	8			
17	Calleguas Connection at Conejo RO Plant (TBD)						
18	Zone Conveyance - 5 New Pump Stations (TBD)						
19	Raw Water Conveyance from PV Wells to Conejo RO Plant (TBD)						
20	Explore Phase III/IV Feasibility (TBD) (cost not included in totals)						
	Estimated Capital Cost Per Year ($M/FY)	$2.59	$7.02	$22.84	$23.65	$9.24	$2.31
	Estimated Local Water Production (% local)	53%	62%	64%	66%	68%	82%

Key Milestones & Decision Points

1. PV#3 PDR Complete - Compare On-site Treatment vs. Conveyance
2. Begin Stakeholder Outreach
3. Incorporate Stakeholders' MP Priorities
4. PV #3 Well Drilled - Determine if Production Capable
5. Adopt Integrated MP
6. RO Draft PDR Complete - Evaluate vs. Baseline (No project)

6A. Select 2A, 2B, 2C, or Combination
7. Determine if New Rate Study is Needed
8. Adopt Regional Exchange Framework (Wheeling & Banking)
9. Annual MP Updates

Legend

- CWD Analysis
- Planning & Pre-Design
- Final Design
- Bid & Award
- Construction & Startup
- Implementation

DRAFT INTEGRATED MASTER PLAN IMPLEMENTATION SCHEDULE
CAMROSA WATER DISTRICT
July 15, 2025

	PROJECT NAME/DESCRIPTION	FY 24-25	FY25-26	FY26-27	FY27-28	FY28-29	FY29-30	FY30-31	FY31-32	FY32-33	FY33-34	FY34-35	FY35-36	FY36-37	FY37-38	FY38-39	FY39-40
	POTABLE WATER INFRASTRUCTURE PROJECTS																
1	University Well #2																
2	Replacement of 4C Hydropneumatic Pump Station																
3	Replacement of 4C Tank																
4	Tank 3A, Recoat/Rehabilitate																
5	Tank 3B, Recoat/Rehabilitate																
6	Tank 3C, Recoat/Rehabilitate																
7	3 MG Tank in Zone 1 and Transmission Line																
8	Tank 4A, Replace (Downsize from 2 MG to 1.5 MG)																
9	Tank 2B, Replace (Upsize from 1.25 MG to 2 MG)																
10	Tank 4B, Replace (Upsize from 0.55 MG to 0.75 MG)																
11	Tank 2A, Recoat/Rehabilitate																
12	Tank 1B, Recoat/Rehabilitate																
13	Tank 3D, Recoat/Rehabilitate																
14	Extension of 24" Water Line on Santa Rosa Rd																
15	Rehabilitation of Pump Station 1																
16	Rehabilitation of Pump Station 2																
17	Rehabilitation of Pump Station 3																
18	Rehabilitation of Pump Station 5																
19	Rehabilitation of Booster Pumps at Conejo Wells																
20	Rehabilitation of Penny Well																
21	Rehabilitation of Tierra Rejada Well																
22	Rehabilitation of Highland Pump Station																
23	Replacement of 24" Transmission from Zone 1 to Zone 2																
24	Rehabilitation of Zone 2 to Zone 3 Pump Station																
25	Distribution Valve Replacement (ongoing)																
26	Rehab MS #11 and Three Pressure Relief Stations																
27	Meter Station Replacement Program																
28	VFD Replacement Program																
29	Pipeline Replacement Program																
	Estimated Capital Cost Per Year ($M/FY)	$1.25	$5.27	$5.18	$6.21	$3.53	$4.60	$6.21	$10.34	$0.12	$0.54	$1.30	$5.41	$2.89	$6.50	$13.68	$6.68

Legend
Planning and Design
Bid, Construction, and Startup

DRAFT INTEGRATED MASTER PLAN IMPLEMENTATION SCHEDULE
CAMROSA WATER DISTRICT
July 15, 2025

	PROJECT NAME/DESCRIPTION	FY 24-25	FY25-26	FY26-27	FY27-28	FY28-29	FY29-30	FY30-31	FY31-32	FY32-33	FY33-34	FY34-35	FY35-36	FY36-37	FY37-38	FY38-39	FY39-40
	NONPOTABLE/RECYCLED WATER INFRASTRUCTURE PROJECTS																
1	Replacement of Ag 3 Tank																
2	Replacement of Ag 2 Tank																
3	New Wildwood Tank																
4	Replacement of Yucca Tank																
5	Rehabilitate Tank 1A																
6	Replacement of PS #4 at Ag2 Tank Site																
7	Refurbishment of SR-10 Well																
8	Rehabilitate Yucca Pump Station																
9	Replacement of Ponds Pump Station																
10	Replacement of Rosita Pump Station																
11	Rehabilitate SR-9 Well																
12	Rehabilitate SR-3 Well																
13	Replacement of Santa Rosa Pump House																
14	Pond Improvements																
15	Hill Canyon Direct Pipeline																
16	VFD Replacement Program																
17	MCC Replacement Program																
18	Pipeline Replacement Program																
	WASTEWATER INFRASTRUCTURE PROJECTS																
1	Repair Sewer Collection Hotspots 2025-2026																
2	Replacement of PLCs at CWRF																
3	Rehabilitate Power Distribution System at CWRF																
4	Rehabilitation of Sewer Lift Station No. 4																
5	Smart Covers Sewer Manholes																
6	Replacement of Lift Station 2																
7	Replacement of Lift Station 1																
8	Replacement of Read Road Lift Station																
9	Replacement of Lift Station 3																
10	Headworks Improvements																
11	Influent Lift Station Improvements																
12	Effluent Pump Station Improvements																
13	RAS/WAS Pump Station Improvements																
14	Hotspots Repair Program 2027+																
15	Replacement of CWRF Effluent Line																
16	Rehabilitation of CWRF Pavement (construction as needed)																
17	Sewer Collection System Replacement Program																
	Estimated Capital Cost Per Year ($M/FY)	$1.88	$7.40	$4.32	$3.89	$5.81	$4.36	$1.88	$2.79	$2.86	$0.73	$0.75	$0.00	$0.00	$0.00	$0.00	$0.00

Legend
- Planning and Design
- Bid, Construction, and Startup

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INTEGRATED MASTER PLAN

CAMROSA WATER DISTRICT

May 29, 2025

CAMROSA WATER DISTRICT

INTEGRATED MASTER PLAN

DRAFT TABLE OF CONTENTS

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1.3 District Background and Setting

1.4 Current Water and Wastewater Management

1.5 Commitment to Achieving District Vision, Goals, and Strategy

1.6 Recommended Implementation Plan

2. INTRODUCTION

2.1 Objectives of the Master Plan

2.2 District Background and Setting

2.3 Vision, Goals, and Strategies for Camrosa Water District

2.3.1 District-wide Level of Service Goals

3. CURRENT RISKS AND UNCERTAINTIES

3.1 Reliance on Imported Water, and Uncertainty of Imported Water Reliability/Costs

3.2 Water Scarcity, Drought Conditions, and Wildfire Risk

3.3 Aging Infrastructure and Maintenance Needs

3.4 Regulatory Compliance

- Quality - Current & Future (incl. MCLs, SMCLs, PHGs, TMDLs and Salt and Nutrient plans, etc.)
- Conservation - Current & Future

3.5 System Growth and Future Demands

Provide a general/District-wide summary with details for each system provided in respective sections.

3.6 Financial Constraints

3.7 Future Uncertainties Around State and Regional Water Management and Interagency Agreements

Levels of certainty regarding SGMA (ASRVBGSA) Basin Mgmt., FCGMA, OPV Adjudication. Levels of certainty regarding agreements for source resources Thousand Oaks, Camarillo, PVCWD, etc

4. THE PLANNING PROCESS

4.1 Description of the Planning Process

Summarize assessment framework

4.2 Water Resources Allocation Policy

5. POTABLE WATER SYSTEM

5.1 District Vision, Goals, and Strategies for Potable Water

5.2 Current Potable Water System Facilities and Operations

Include reference to regulatory issues in Section 3.

Include summary (1-2 pages) of primary W&C TMs (Water Resources Planning TM, and Near-Term Capital Improvements Plan TM).

Include modeling evaluation and storage TM.

5.3 Level of Service Goals

5.4 Potable Water System Needs Assessment

Water Supply Projects

Infrastructure Improvements Projects

5.5 Potable Water System Priorities

Apply the planning process described in Section 4.1. The District will determine priorities that factor in needs, costs, goals and strategies.

6. NON-POTABLE WATER SYSTEM

6.1 District Vision, Goals, and Strategies for Non-Potable Water

6.2 Current Non-Potable Water System Facilities and Operations

Reference regulatory issues in Section 3.

6.3 Level of Service Goals

6.4 Non-Potable Water System Needs Assessment

(placeholder) Future TM to document potential uses of NP system resources, needs, costs, goals and strategies. Include storage analysis.

Include modeling evaluation

6.5 Non-Potable Water System Priorities

Apply the planning process described in Section 4.1. The District will determine priorities that factor in needs, costs, goals and strategies.

7. WASTEWATER SYSTEM

7.1 District Vision, Goals, and Strategies for Wastewater

7.2 Current Wastewater System Facilities and Operations

7.3 Level of Service Goals

7.4 Wastewater System Needs Assessment

7.5 Wastewater System Priorities

Apply the planning process described in Section 4.1. The District will determine priorities that factor in needs, costs, goals and strategies.

8. IMPLEMENTATION PLAN

Reference the planning process described in Section 4.1.

8.1 Phased Approach to Implement Recommended Projects

Summarize the projects identified in Sections 5, 6, and 7

8.2 Integrated Implementation Plans

8.3 Description of Adaptive Management and Summary of Triggers

8.4 Financial Planning and Funding

8.5 Stakeholder Collaboration and Community Engagement

DRAFT TECHNICAL MEMORANDUM

TO: Camrosa Water District

PREPARED BY: Gabriel Aviles, Woodard & Curan

Max Storms, Woodard & Curran

Stephanie Estabrook, Woodard & Curran

REVIEWED BY: Xavier Irias, Woodard & Curran

Brian Van Lienden, Woodard & Curran

DATE: July 18, 2025

RE: Integrated Water Program Master Plan: Risks & Uncertainties

1. BACKGROUND & OBJECTIVES

1.1 Background

The Camrosa Water District (CWD or District) retained Woodard & Curran in May 2025 to develop an Integrated Water Program Master Plan (IWMP). This comprehensive plan will build upon prior and follow-on efforts to guide the District's long-term water infrastructure and resource planning. The IWMP will incorporate the following efforts:

- Prior work by W&C:
    - Strategic Plan Update
    - Near Term CIP for Repair, Rehabilitation, and Replacement Needs
    - Water Resources Planning Analysis
    - Potable System Storage Analysis
    - Grant Opportunities Research TM
- Follow-on work:
    - August 2024 Board Workshop
    - Water Resources Allocation Plan
    - District Budgets, Schedules, and Planning

The IWMP will serve as a comprehensive and actionable plan to validate, refine, and communicate the District's implementation strategy. It will outline a prioritized sequence for executing capital projects.

Through adaptive management strategies, the plan will provide program and project-specific recommendations to support key decision-making and guide future actions. This approach will enable the District to respond and adapt to evolving conditions. Additionally, the plan will lay a groundwork for future planning efforts, including environmental documentation and permitting requirements. Through this integrated approach, the IWMP will guide capital investments over the next 25 years, reinforcing the District's commitment to delivering reliable, sustainable, and cost-effective water services.

For this effort, the District aims to identify risks and uncertainties that might affect any of its three services (potable water, non-potable water, and wastewater) and evaluate their potential impact on capital planning decisions. To support this, it is important to distinguish between the concepts of risk and uncertainty, as each plays a unique role in capital planning efforts.

Risks involve uncertainty, and uncertainties may give rise to risks, but they have clear differences. A risk, if clearly defined, can be factually judged to have occurred, or not. For example, an earthquake causing shaking above a certain intensity can be judged in hindsight as happening, or not. By contrast, uncertainty is a characteristic of a system that may give rise to risk. As a practical matter, listing and talking about uncertainties may help us identify and therefore manage risks, but the uncertainties themselves may have little probative value.

1.2 Objective of this TM

The objective of this technical memorandum (TM) is to identify and characterize important risks and uncertainties associated with the projects identified in the District's capital program. A Risk Register will be the primary tool for doing so; the register will organize the various risks according to their root risk types, and capture information regarding the nature of each risk. Beyond its value for identifying and characterizing risks, the register can help identify important mitigations and their timing, as well as enhance visibility into the risk management process.

While uncertainty is a fundamental aspect of risk, and thus needs to be considered in order to identify and assess risk, the risk register is a catalog of risks, not uncertainties per se.

The Risk Register serves as a foundational assessment and is intended as a preliminary working document that facilitates collaboration among stakeholders. It is designed to support ongoing review and discussion, with the expectation that additional risks may be identified and incorporated based on input from District staff and board members. The TM is organized as follows:

- **Background & Objectives:** Provides background information on the IWMP and defines the objective for the TM
- **Risk Framework:** Defines key terms and provides examples for how risks are identified and evaluated; illustrates how the Risk Register is used in practice
- **Risk Register:** Includes the preliminary Risk Register (for review and discussion)

2. RISK FRAMEWORK

2.1 Definitions

To support the development of the Risk Register, the following key terms are defined:

- **Risk:** a potential hazard that, if it occurred, would likely have a negative consequence. A risk may be characterized as both the likely consequence if the hazard occurred, as well as the estimated likelihood of occurrence of the hazard within a given planning horizon.
- **Uncertainty:** a situation in which outcomes, probabilities, or impacts are not well understood. Uncertainty may create or magnify risk. For example, future uncertainty in the price of energy creates a risk that operating costs exceed budgetary estimates.
- **Hazard:** a specific event, condition, or situation that has the potential to cause harm or disruption. Hazards may be natural, technical, or organizational.
- **Consequence:** the outcome or impact that results from a hazard occurring. Consequences can vary in severity.
- **Mitigation:** actions or strategies implemented to reduce either likelihood of a hazard occurring or the severity of its consequences.
- **Response:** actions taken to address a hazard or risk after it has occurred or been identified. A response aims to manage, contain, or recover from the consequences of the event. Responses can be immediate or longer-term.

2.2 Root Uncertainty

Root uncertainty refers to the primary, underlying factor that gives rise to a risk. Identifying the root risk helps in understanding the nature of the risk and developing effective mitigation and response strategies. Table 2-1 lists the root risk types into which key risks may be organized.

TABLE 2-1: ROOT RISK TYPE DEFINITIONS

Root Uncertainty	Definition	Examples of Key Risk Drivers
Hydrologic	Potential impacts on water supply, infrastructure and system performance due to variability or changes in the natural water cycle.	• Climate change • Seasonal variability
Macroeconomic	Potential for economic conditions and market factors to affect the cost, schedule, and delivery of water supply and infrastructure projects.	• Inflation in one or more sectors of the economy • Supply chain disruption • Macro-economic societal trends, e.g., change in water demand drive by economy
Regulatory	Potential for changes in laws, regulations, policies or enforcement practices that could affect planning, design, funding, construction, or operation of water supply and infrastructure projects.	• Water quality standards • CEQA case law • Federal regulations, orders, etc.
Natural-Disaster	Potential for significant disruption or damage to water supply systems and infrastructure caused by extreme natural events.	• Earthquakes • Floods • Wildfires
Third-Party	Potential for disruption, delays, or failures in water infrastructure planning, construction, or operations due to the actions, performance, or reliability of external entities not directly controlled by the District.	• Interagency dependencies • Appropriative Water rights • Property acquisition delays
Infrastructure-Performance	Potential for existing or planned water system assets to underperform, degrade, or fail to meet intended service levels over time.	• Aging infrastructure • Capacity limitations

2.3 Project Impact Category

Project impact is a second level of categorization that indicates the specific domain that is impacted by a given root cause and risk. This specifies how a risk may affect the Integrated Water Program and enhances a more focused mitigation and response strategy.

TABLE 2-2: PROJECT IMPACT CATEGORY DEFINITIONS

Project Impact Category	Definition
Water Supply	Availability, reliability, and quality of water resources necessary to meet current and future demands
Financial	Cost, funding, and long-term financial impact of water supply and infrastructure projects
System Operation	Disruption to day-to-day operations due to physical, environmental, or project-related challenges.

2.4 Likelihood of Occurrence

Likelihood of occurrence is an estimated probability that a particular risk will be realized within a set planning horizon. Likelihood may be considered along with the potential consequences associated when assessing the overall magnitude of a risk. Assessing likelihood allows for a quantitative assessment and defines the criticality of the risk or uncertainty.

It's often neither practical nor necessary to estimate likelihood with great precision, but the quantifiers shown in Table 2-3 may be helpful to calibrate subjective assessments with the state of practice in risk management.

Two key thresholds used for natural hazards are 10% in 50 years and 2% in 50 years. These probabilities are reflective of risks implicitly accepted in building codes. If we make certain assumptions[1] about the statistical distribution of a risk's occurrence, 10% in 50 years is equivalent to a 475-year recurrence interval, while 2% in 50 years is equivalent to a 2,475-year recurrence interval. Commonly we accept 10%-in-50 for risks that involve manageable economic loss (e.g., major damage to a home due to a windstorm), while we hope for lower probabilities like 2% in 50 for hazards that are likely to cause loss of life, such as catastrophic collapse of a building in an earthquake.

Some other risks may not lend themselves to arbitrary planning horizons such as 50 years. For example, if the risk is that the regional brine line is not available for the District's use, the time aspect of that risk is more appropriately tied to completion of the planned desalter, not "within 50 years".

[1] The most important assumption is the hazard is a Poisson process, i.e., that the arrival time of the next occurrence is not determined by, or informed by, the time of the last occurrence. Clearly this assumption is not met for all hazard, for example earthquakes that are time-dependent because of strain buildup and release, but the assumption remains a popular approximation due to its simplicity. A secondary assumption is stationarity, i.e., that the risk does not change over time.

TABLE 2-3: LIKELIHOOD OF OCCURRENCE DEFINITIONS

Likelihood of Occurrence	Probability of Risk Occurring
Probable	> 50% in 50 years
Possible	10 – 50% in 50 years
Unlikely	10% in 50 years
Very Unlikely	2% in 50 years

2.5 Consequence

When characterizing a risk, sometimes the consequence associated with a hazard is uncertain. For example, an earthquake of a certain magnitude, located within the service area, might create unplanned downtime for a given facility or system, but the amount of downtime is highly uncertain. For the purposes of a risk assessment, it's generally useful to consider the level of consequence as *that which is reasonably foreseeable given current knowledge and assumptions*. The consequence is not necessarily the very worst case that might happen if various uncertainties lined up perniciously, nor is it the best case that might happen if the uncertainties lined up propitiously.

When characterizing an uncertainty, the potential consequence of that uncertainty on a planned project or strategy can be characterized.

To support consistent evaluation of risks, consequence severity is categorized into three levels: high, medium, and low. These categories characterize the reasonably foreseeable impact of a hazard on a project, system, or objective, based on current knowledge and assumptions.

- **High:** signification impact. May result in major service disruptions, long-term recovery efforts, or substantial financial costs. Requires immediate attention and robust mitigation and response strategies.
- **Medium:** moderate impact. May cause temporary service disruptions, moderate financial costs, but does not compromise the integrity of the system.
- **Low:** minor impact. May lead to limited or no service disruption, minimal financial implications, and may require minimal response. Does not have a significant long-term impact.

2.6 Mitigation Strategy

A mitigation strategy is a measure that can reduce a risk, by reducing its consequence, likelihood, or both. For purposes of this work, mitigations are measures taken prior to the risk occurring. Other risk-reducing measures are classified as response strategies. Typically, the consequence associated with a given risk incorporates appropriate response; for example, the consequences associated with a main break assume that crews would respond appropriately to isolate the broken main and minimize the impact of the break on system operations.

Often there will be multiple strategies available to reduce a given risk; the strategies may be alternatives to one another, or complementary, and they may differ in timing. For example, to mitigate the risk of a given project exceeding its budget, there may be multiple strategies including adjustment of contingencies, obtaining more information to support a more precise cost estimate.

2.7 Response Strategy

A response strategy is a predefined approach or set of actions to be implemented in response to a realized risk with the goal of minimizing its impact. Clearly, a response strategy can manage only consequences not likelihood.

2.8 Post-Mitigation Risk

A residual or remaining risk that still exists even after mitigation strategies have been implemented. Some mitigation strategies are not 100% effective at eliminating risk, and/or some risks may emerge because of the mitigation itself.

2.9 Risk Framework in Action

To illustrate how the risk framework is applied, Table 2-4 presents a simple example (hosting a dinner) to demonstrate the process. An example will identify a potential risk, assess its consequences, develop mitigation and response strategies, and assess any possible post-mitigation risks. This practical scenario will highlight the framework's ability to support informed decision-making and prioritize appropriate actions and/or strategies.

TABLE 2-4: RISK FRAMEWORK IN ACTION

Risk	Consequence	Mitigation Strategies	Response Strategies	Post-Mitigation Risks
More guests show up than invited to the dinner	There is not enough food for guests	• Get more information by double-checking headcount and plus-ones • Communicate with guests to limit attendance and reduce unexpected guests • Pay for reliability by making extra food	• Have a back-up plan - be ready to order more food • Live with consequences - guests eat less per capita • Prioritize key guests – ensure core guests are served first before food is limited	• Extra food might go to waste due to fewer guests in attendance • Quality of guest experience declines • Increased costs may exceed initial budget

3. RISK REGISTER

The Risk Register is provided as Attachment 1. The Risk Register serves as an assessment tool and dynamic working document that promotes collaboration. It is intended to support ongoing dialogue and review, with the understanding that risks may be identified and incorporated based on feedback from District staff and board members. The Risk Register is provided as Attachment 1 of this TM.

The examples in Table 3-1 identify the root uncertainty causing the risk itself and characterize the individual risk, including potential consequences, mitigation or response strategies, and any remaining post-mitigation risks. The Risk Register included as Attachment 1 inventories __ specific risks.

TABLE 3-1: RISK REGISTER EXAMPLES

Root Uncertainty	Risk	Consequence	Mitigation or Response Strategies	Post-Mitigation Risk
Hydrology	Sustainable yields in Santa Rosa Basin are >20% below projected (3,359 AFY).	• Dependence on imported water is more than anticipated. • Santa Rosa assets have less utility than anticipated.	• Maintain connection to Calleguas. • Design system to use more PV supply if needed. • Further characterize Santa Rosa Basin prior to capital investments.	• Threat to water supply is effectively mitigated. • Residual risk is stranded assets.
Third-Party	SMP is not constructed before completion of Conejo Desalter.	Desalter cannot operate without brine disposal.	• Evaluate alternatives brine disposal methods. • Tie desalter construction to SMP completion.	• Risk of creating stranded asset is effectively mitigated. • Conejo desalter must wait for all elements to be in place.
Regulatory	Raw groundwater quality in Santa Rosa Basin degrades or new contaminants are identified that cannot be removed with designed treatment.	Desalter cannot operate.	• Maintain footprint for future expansion of treatment at Conejo Desalter. • Consider robustness of selected treatment technologies during design	• Future treatment may still be constrained by available physical space, lack of funding opportunities, and permitting delays. • Additional treatment may not be cost-effective.

Camrosa Water District (CWD) - Risk Register - DRAFT[1]

Notes:

1. Risk Register should be considered "DRAFT - Work-in-Progress" and for review and discussion. Comments, revisions, additions, and clarifications are welcome
2. Reasonably foreseeable impact if the hazard does occur.

Root Uncertainty	Project Impact Category	Risk	Service	Impacted Project(s)	Likelihood of Occurrence	Consequence[2]	Mitigation or Response Strategies	Post-Mitigation Risk	Additional Information
Hydrologic	Water Supply	Yields in Santa Rosa Basin are >20% less than anticipated (3,359 AFY)	Potable Water	Conejo Desalter	Possible	Dependence on imported water is more than anticipated. Santa Rosa assets have less utility.	Maintain connection to CMWD; design system to use more PV supply if needed; further characterize Santa Rosa Basin before making major capital investment	Threat to water supply is effectively mitigated Residual risk is stranded assets	
Third-Party	Water Supply	After new PV wells are built, adjudication in Pleasant Valley Basin limits the District ability to exchange Conejo Creek supply >20%.	Potable Water & Non-Potable Water	New PV wells & treatment	Unlikely	Dependence on imported water is more than anticipated.	Maintain connection to CMWD; develop more robust water quality baseline; develop a more robust hydrogeologic understanding	Threat to water supply is effectively mitigated Residual risk is stranded assets	
Regulatory	Financial	Conejo desalter is delayed by permits or litigation such as a CEQA or ESA concern.	Potable Water	Conejo Desalter	Unlikely	Dependence on imported water ismore than anticipated.	Avoid committing funds for final design until CEQA and other major legal risks are extinguished.	Financial exposure is minimized by deferring until legal and permitting uncertainties are resolved. Residual risk is delay of local water supply infrastructure and stranded assets in both the Conejo Wellfield and PV basin.	Mitigating risk by waiting for CEQA to clear is in tension with rapid completion of the project.
Third-Party	Water Supply	SMP is not constructed before completion of Conejo Desalter	Potable Water	Conejo Desalter	Very Unlikely	Desalter cannot operate without brine disposal.	Do not award construction contract until risk is greatly reduced (i.e., SMP is under construction or under contract for construction).	Risk of creating stranded asset is effectively mitigated. Conejo Desalter must wait for SMP to be in place.	
Macroeconomic	Financial	Lifecycle costs for new water supply projects outpace imported water costs	Potable Water	All local supply projects	Possible	Cost of water service would turn out to be higher with the planned projects than without.	Conduct a lifecycle cost assessment and sensitivity analysis for each proposed project, identifying capital and O&M cost thresholds that the District would not want to exceed. Update cost analysis at major decision points such as prior to awarding a construction cost, using the latest available data including capital cost and energy costs.	Data driven decisions mitigate the risk by identifying cost drivers and projects that will exceed acceptable costs Residual risk is uncertainty of future imported water rates	
Macroeconomic	Financial	Fewer and higher bids drive project costs >20% higher and/or delay schedules above existing cost and schedule estimates.	All Systems	All projects	Possible	Schedules may be delayed or project budgets may signficantly increase.	Perform value-engineering at major milestones, and adjust course as needed. Consider alternative project delivery (e.g., design-build); consider higher contingency; pre-purchase selected equipment.	Even with mitigations, costs may exceed estimates.	
Macroeconomic	Water Supply	Water demands increase at a pace that outstrips local supply	Potable Water & Non-Potable Water	All local supply projects	Unlikely	Dependence on imported water is more than anticipated.	Implement demand management strategies to reduce per capita water use; assess ability of local supply to meet demands from new development before issuing will-serve letters	Over-allocation and excessive per capita use of local supply is effectively mitigated. Residual risk of unpredictable demand still remains.	
Regulatory	Water Supply	Raw groundwater quality in Pleasant Valley Basins degrades relative to assumed baseline, or new regulations target emerging contaminants that cannot be removed with planned treatment	Potable Water	All local supply projects	Probable	Planned treatment facilites may not adequately address higher contaminant concentrations, or new contaminants	Conduct on-going source water monitoring to detect changes in water quality early. Design for treatment flexibility and scalability through modular treatment technologies to allow for future enhancements without full system replacement.	Future treatment may still be constraned by available physical space, lack of funding opportunities, and permitting delays. Additional treatment may not be cost-effective.	
Third-Party	Water Supply	Agreement to acquire Thousand Oaks groundwater credits is not in place to meet future demands (2030 and beyond)	Potable Water & Non-Potable Water	All local supply projects	Unlikely	Dependence on imported water more than anticipated.	Initiate early and proactive negotiations to outline terms, expectations, and mutual benefits		
Natural-Disaster	System Operation	Seismic event of magnitude 6.0 or greater occurs within the service area before seismic improvements are completed.	Potable Water	All projects	Unlikely	Unplanned post-EQ downtime potentially exceeding standard guidelines of 7 days for some customers.	Take interim action to reduce seismic vulnerability, short of full tank rehabs or replacement; this might include assessing impact of specific tank outages, adding valves to isolate failures, developing recovery plans.	Understanding of system impact from a seismic event is established. Some residual risk of high-consequence failures still remains.	
Infrastructure-Performance	System Operation	Critical equipment experiences a failure or drop in performance resulting in a service outage before planned maintenance or replacement occurs.	All Systems	Rehab / replacement projects	Possible	If a critical pipeline breaks, service may be temporarily reduced while repairs are made. Possible environmental, social, and economic disruption.	Establish a response plan in case critical equipment does fail, such as stocking repair parts. Perform proactive inspections to periodically assess the status and performance of highly impactful assets. Consider measures to reduce consequence, such as isolation valves.	Unplanned service outages are reduced or completely mitigated Residual risk is redundancy may not cover multiple concurrent failores or cascading issues	
Hydrologic	Water Supply	State Water Project reliability substantially reduces CMWD deliveries (>20%) in dry years	Potable Water & Non-Potable Water	All local supply projects	Possible	Further erosion of SWP reliability would heighten need for reliable local supply, potentially justifying enhanced reliability features for local supply projects.	Diversify local water supply portfolio (groundwater recharge, recycled water, stormwater capture, desalination) to reduce CWMD dependence.		
Regulatory	Water Supply	Required permits cannot be secured for water supply projects.	All Systems	All projects	Unlikely	Schedules may be delayed or project budgets may signficantly increase	Initiate early conversations with permitting agencies to identify potential roadblocks; conduct thorough environmental and technical studies to support permit applications; identify and reach out to environmental groups to discuss environmental impacts.		
Third-Party	Water Supply	Property rights needed to build water supply projects are not obtained.	All Systems	All projects	Unlikely	The District will need to evaluate impacted projects Schedules may be delayed or project budgets may signficantly increase	Evaluate alternative sites. Conduct outreach to property owners to assess property availability.		
Regulatory	Water Supply	Raw water quality in Santa Rosa degrades, or new regulations target emerging contaminants, to a degree that cannot be treated with designed treatment	Potable Water & Non-Potable Water	All local supply projects	Possible	Desalter cannot operate	Maintain footprint for future expansion of treatment at Conejo Desalter Consider robustness of selected treatment technologies during design	Future treatment may still be constrined by available physical space, lack of funding opportunities, and permitting delays Additional treatment may not be cost-effective	
Natural-Disaster	System Operation	Large wildfire occurs in CWD service area	All Systems	All projects	Possible	New system operation limits ability to respond to wildfire	Evaluate whether CMWD connections will be available during a wildfire as redundant supply; model fire demand conditions to assess new infrastructure performance.		
Natural-Disaster	System Operation	A regional power outage at a duration that exceeds CWD's backup capacity occurs.	All Systems	All projects	Possible	Unplanned downtime exceeding 24 hrs for some customers.	Assess and expand back-up power capacity to extend operational continuity during extended outages. Develop load management strategies to prioritize critical facilities and operations for back-up power.		
Infrastructure-Performance	System Operation	Final water supply portfolio dictates different distribution configuration than currently believed.	Potable Water	Distribution system projects	Unlikely	Some of the new pumping and transmission infrastructure may not be optimal for the District's needs.	Coordinate supply and distribution planning to ensure alignment from the outset, adjusting work schedules as needed so any uncertainties are resolved before major capital is invested. Expand hydraulic modeling efforts to simulate various supply configurations and identify distribution implications.	The mitigations would effectively eliminate this risk, at the cost of potentially extending the timeline for some projects.	

Camrosa Water District (CWD) - Risk Register - DRAFT[1]

Notes:
1. Risk Register should be considered "DRAFT - Work-in-Progress" and for review and discussion. Comments, revisions, additions, and clarifications are welcome
2. Reasonably foreseeable impact if the hazard does occur.

Root Uncertainty	Project Impact Category	Risk	Service	Impacted Project(s)	Likelihood of Occurrence	Consequence[2]	Mitigation or Response Strategies	Post-Mitigation Risk	Additional Information
Third-Party	Water Supply	Calleguas does not agree to wheel supply.	Potable Water	All local supply projects	Unlikely	Planned treatment facility and blending station at Pleasant Valley may not meet regulatory water quality standards	Progress forward the construction of raw water transmission main to convey water from PV basin to RO treatment for blending		
Third-Party	Water Supply	Calleguas does not agree to provide backup supply (at de minimis pricing).	Potable Water	All projects	Possible	Calleguas increases costs it charges to Camrosa for standby connection	Develop a formal back-up supply agreement with Calleguas that defines conditions, volumes, pricing, and triggers for back-up supply		
Infrastructure-Performance	Water Supply	Recovery rate of Conejo Desalter falls short of expectations by more than 20%.	Potable Water	Conejo Desalter	Possible	Dependence on imported water more than anticipated.	Conduct pilot testing and performance validation to validate recovery assumptions		
Natural-Disaster	System Operation	Major wildfire requires water supply in excess of system capabilities.	Potable Water & Non-Potable Water	All projects	Unlikely	Firefighters lack water for firefighting.	Partner with fire districts to educate on the parameters used for water system design. Assess options for additional system interties.		
Infrastructure-Performance	Water Supply	Fe/Mn treatment efficiency for Pleasant Valley wells is less than expected, resulting in Fe/Mn concentrations higher than allowable.	Potable Water	New PV treatment and blending station	Unlikely	Dependence on imported water more than anticipated due to continued need to blend.	Conduct pilot testing and performance validation to validate treatment efficiency	Treatment could still fall short of needs, and require additional investment to remedy.	
Third-Party	Financial	Calleguas does not purchase or exchange excess treated water from Conejo Wellfield	Potable Water	All local supply projects	Possible	Reduced revenue or groundwater credits	Develop a formal water exchange agreement. Optimize internal use and storage by maximizing use of available water within the District when external offtake is unavailable.		
Infrastructure-Performance	Water Supply	New water supply chemistry causes corrosion or other problems in the water system (e.g., Tuscon / Flint) leading to infrastructure damage, regulatory violations, or public concerns.	Potable Water & Non-Potable Water	All projects	Unlikely	Customer complaints; decrease in consumer confidence; need for system reoperation; potential need for accelerated replacement of assets	Conduct comprehensive water quality characterization; perform corrosion control and bench testing to predict and mitigate corrosion.		
Infrastructure-Performance	System Operation	Nonpotable system experiences sustained outages (>10 days) that requires use of potable supply to meet nonpotable demands	Potable Water & Non-Potable Water	All local supply projects	Possible	Local potable supply is not sufficient to meet demands; dependence on imported water more than anticipated	Identify non-essential non-potable users for reduction of water supply during system failures, leading to a reduce demand and preservation of potable supply for critical needs. Build redundancy into the non-potable system to reduce the likelihood of needing potable water.		
Macroeconomic	Water Supply	Distribution system upgrades are not in place prior to new water supply projects being built	Potable Water & Non-Potable Water	All local supply projects	Unlikely	District cannot fully utliize new supply projects; dependence on imported water more than anticipated	Align supply and distribution planning to ensure infrastructure is ready to receive and convey new supplies; prioritize critical path infrastructure that are essential to new supply integration		
Hydrologic	Water Supply	Pleasant Valley Basin hydraulics require groundwater pumping from other parts of the basin (i.e., existing well locations are not consistent with hydrogeologic reality)	Potable Water	All local supply projects	Unlikely	District may need to convey water extracted from elsewhere in the Basin for District use.	Conduct detailed hydrogeologic modeling to simulate basin behaviors under various pumping scenarios		
Infrastructure-Performance	Water Supply	A reduction in wastewater flows reduce access to nonpotable / recycled water supply >20%	All Systems	All local supply projects	Possible	Non-potable supply is insufficient to meet non-potable demands, requiring use of potable system to meet non-potable demands. Dependence on imported water more than anticipated.	Establish a non-potable system demand management strategy that prioritizes essential uses and reduces demand during shortages		
Hydrologic	Water Supply	Flow or water quality from Conejo Creek supply is impaired via natural processes	Potable Water & Non-Potable Water	All local supply projects	Unlikely	Impaired water quality makes Conejo Creek unsuitable for agricultural use, leading to a loss of exchange credits in PV Basin. Reliance on imported water more than ancitipated.	Conduct watershed and hydrologic assessments; implement watershed protection measures; conduct outreach to irrigation partners to assess water quality requirements.		
Macroeconomic	Financial	Demands are reduced to a level that increases unit costs substantially, making local supply >20% more expensive than imported water	All Systems	All projects	Unlikely	Project costs and rates are higher than anticipated.	Conduct sensitivity analysis to assess unit costs; assess impacts of reduced revenues in face of changing water use objectives.		
Hydrologic	Water Supply	Other users in Santa Rosa Valley Basin increase pumping, limiting the District's ability to extract water sustainably.	Potable Water & Non-Potable Water	Conejo Desalter, local supply projects	Very Unlikely	Conejo Desalter cannot operate at full capacity; dependence on imported water more than anticipated.	Explore legal agreements or basin management frameworks that protect the District's pumping.		
Macroeconomic	Financial	District is unable to acquire needed funding for projects	All Systems	All projects	Possible	Construction is delayed for one or more projects. Project economics (cost-effectiveness) could also be negatively impacted.	Leverage partnerships with other agencies to pursue joint funding applications. Pursue available grant funding. Revisit funding availability as projects advance through design process.		
Macroeconomic	Water Supply	Political support for investments in water supply independence diminishes due to shifting priorities, leadership changes, or public opposition before water supply projects are completed.	All Systems	All projects	Possible	One or more key projects are stalled or cancelled.	Develop outreach programs that highlight the benefits of local water supply independence; align projects with other District goals	Strong communications and alignment will greatly reduce this risk.	
Macroeconomic	Financial	District's internal resources are insufficient to implement and manage the Integrated Water Program	All Systems	All projects	Unlikely	Projects are significantly delayed; project budgets significantly increase.	Conduct a resource needs assessment; evaluate current staffing levels, skill sets, and workload. Identify resource gaps and prioritize hiring or support. Leverage external consultant and contractor support.		
Macroeconomic	Financial	Contract price or contract performance for sludge dewatering becomes economically unfavorable compared to District-owned and operated mechanical dewatering system.	Wastewater	Mechanical dewatering system	Possible	Operating costs are greater than anticipated	Conduct lifecycled cost analysis of contract vs. owned infrastructure; evaluate contract agreement to assess whether terms are agreeable. Preserve options to revert to owner-operated sludge handling.		
Macroeconomic	Water Supply	Technology advances make other water supply options such as DPR or POE treatment more attractive than the current strategies.	All Systems	Conejo Desalter	Very Unlikely	Local water supply projects become less cost-effective relative to alternatives.	Monitor industry trends to identify new and promising technologies.		

Levels of Service Goals

The District recognizes the importance of water resources and is committed to working with all residential, business, and municipal customers by improving its Levels of Service Goals and ensuring that our products and services will be reliable, affordable, and of high quality.

Levels of Service Goals are both quantitative and qualitative measures that are needed to meet the community's basic needs and expectations. The measures may be either objective or subjective, depending on the service being evaluated. Several factors contribute to developing these Levels of Service Goals including:

- Regulatory Requirements
- District Goals and Objectives
- Customer Expectations
- Water Supply Reliability
- Health and Safety Needs
- Adopted Design Standards.

Tables X-1 to X-4 summarize the District's Levels of Service Goals for general services, potable water services, nonpotable/recycled water services, and wastewater services. The Levels of Service Goals listed in these tables define criteria that the District is committed to meeting in establishing goals and objectives relevant within the Camrosa service area. Both the physical facilities and the approach that services are delivered by District employees are measured against these Levels of Service Goals. These Levels of Service Goals will guide the evaluation of existing facilities and the development of a long-range vision for projects needed to meet the expectations of the District's customers.

Table X.1. Levels of Service Criteria – General Services

General Services	Description
Customer Service	Phone calls and emails regarding account and billing inquiries and requests should be responded to within 48 hours. Other non-emergency-related inquiries and requests regarding Engineering, Operations, and Water Quality and other inquiries should be responded to within five (5) working days.
Water Quality/Regulatory	Camrosa shall maintain a CA ELAP accredited laboratory for purposes of ensuring water quality within the District.
	Water quality/taste/odor complaints shall be addressed within one (1) working day of receipt.
Reliability	All facilities will be designed, maintained and secured in accordance with the American Water Works Association and general industry standards.
	A professional Civil, Mechanical, or Electrical Engineer registered in the State of California shall approve all design and construction documents.

	All water distribution facilities shall be inspected weekly, and all deficiencies shall be resolved within five (5) working days.
	Minor leaks will be repaired within two (2) working days, and major leaks will be repaired within 24 hours, of detection.
	Service pressure goals for residential units shall be maintained between 20 and 150 PSI.
	Unaccounted-for water (water loss) shall be limited to no more than 5% of total water produced.
	The Board will dedicate sufficient capital and resources to repair, replace, and upgrade facilities to minimize service disruptions.
	The District will seize every opportunity to reduce dependence upon imported water and expand the use of local water resources in meeting water demand.
	All O&M and engineering staff will be familiar with the District's Vulnerability Assessment and Emergency Response Plans.

Table X.2. Levels of Service Criteria – Potable Water Services

Potable Water Services	Description
Water Quality	Drinking water constituents shall be below the Maximum Contaminant levels (MCLs) established by the USEPA and shall meet all Primary Drinking Water Standards established by the CADDW. The District maintains additional water quality goals including, but not limited to the following: • Iron less than 0.2 mg/L; • Manganese less than 0.05 mg/L; • Nitrate (as N) less than 6 mg/L; • TDS less than 750 mg/L; • Hardness less than 250 mg/L.
	Water quality samples shall be analyzed by a CA ELAP-accredited laboratory as required by the California Health and Safety Code.
	All potable water production, storage and distribution facilities shall be free from sanitary defects.
	There shall be no physical connection between the potable water distribution system and that of any other water supply except in compliance with the Regulations Relating to Cross Connections as outlined in the SWRCB's Cross-Connection Control Policy Handbook and the District's Cross-Connection Control Plan.
	The District will have zero (0) Notice of Violations.
	The District will maintain a hydrant flushing schedule to promote water quality within the distribution system.

Reliability	Customers will be provided with as much advance notice as possible for potential shutdowns. We strive for at least 48 hours notice minimum. All non-emergency shutdowns will be limited to a maximum of eight (8) hours.

Table X.3. Levels of Service Criteria – Nonpotable/Recycled Water Services

Nonpotable/Recycled Water Services	Description
Water Quality	Recycled water shall meet all the standards established by the State of California under Title 22 of the California Water Code.
	Non-potable surface water quality shall meet all standards established by the RWQCB allowing for recreational body contact.
	Water quality samples shall be analyzed by a CA ELAP accredited laboratory as required by the California Health and Safety Code.
	An approved backflow device shall be placed on the potable water service before any property may receive non-potable water service.
	The District will maintain a backflow inspection/cross connection control program in accordance with the SWRCB's Cross-Connection Control Policy Handbook and the District's Cross-Connection Control Plan.
Reliability	All non-emergency shutdowns will be limited to a maximum of 24-hours.

Table X.4. Levels of Service Criteria – Wastewater Service

Wastewater Services	Description
Water Quality	Wastewater shall meet all the standards established by the State of California under Title 22 of the California Water Code.
	Wastewater quality shall meet all standards established by the CARWQCB.
	Water quality samples shall be analyzed by a CA ELAP accredited laboratory as required by the California Health and Safety Code.
Reliability	All non-emergency shutdowns will be limited to a maximum of 24-hours.