Will the Next Big One Leave You High and Dry?

Release Date: July 8, 2025

ISSUE | SUMMARY | BACKGROUND | METHODOLOGY | DISCUSSION | FINDINGS RECOMMENDATIONS | REQUEST FOR RESPONSES | GLOSSARY | APPENDIX

ISSUE

To what extent are water providers in San Mateo County prepared to supply water to customers in the event of a major catastrophe such as an earthquake, wildfire, tsunami, etc.?

SUMMARY

This report builds on the findings from the 2021–22 San Mateo Civil Grand Jury report titled *"The Other Water Worry: Is Your Water Provider Prepared for the Big One?"* Parts of the background, legal details, and discussion have been taken directly or adapted from that earlier report, where the facts remain accurate and relevant. All new findings and suggestions in this report reflect the 2024–25 Grand Jury's investigation.

San Mateo County faces several kinds of disasters—both natural and man-made—that may need an emergency response. These include wildfires, strong earthquakes, tsunamis, cyberattacks, and the intentional poisoning of water supplies. The San Francisco Public Utilities Commission (SFPUC) expects to restore access to the Hetch Hetchy Water System within 72 hours of a major earthquake. However, some County water providers don't have enough backup water or power to run pumps and generators for three full days.

The 2021–22 Grand Jury investigated 12 County water providers. At that time, each had a formal Emergency Response Plan (ERP) as required by the Environmental Protection Agency (EPA), but none had written After-Action Reports (AARs) to show the results of their emergency drills. We followed up with the following providers: Estero Municipal Improvement District, Redwood City, and East Palo Alto to see if their testing, review, and improvement processes had gotten better. We also looked at two coastside water districts, Coastside County Water District and Montara Water and Sanitary District, because their location makes them more isolated.

We found a big weakness in disaster planning. Although every provider had done tabletop exercises, only a few did hands-on drills, and none had run full-scale emergency exercises. This raises serious concerns about whether they are ready for a real crisis.

We also met with San Mateo County's Department of Emergency Management (SMCEM, also known as the Department of Emergency Management or DEM). Even though the Department is in charge of coordinating emergency response, they have had minimal contact with water providers. They also do not track how much emergency water is available or whether local systems could keep providing water during a disaster.

SMCEM should create a disaster plan that follows EPA guidelines and work closely with local water providers. These providers need to improve their emergency readiness by making sure they

have enough stored water and fuel to last at least three days. They also need to follow their ERPs and carry out drills, then write AARs to show what they learned.

SMCEM is also responsible for initiating and managing the Multijurisdictional Local Hazard Mitigation Plan, last published in 2021. To ensure transparency and progress, the Grand Jury recommends that by October 31, 2026, SMCEM report on how the 2021 mitigation projects are moving forward. They should also set up a system to follow up and report on the 2026 Local Hazard Mitigation Plan once it is released.

BACKGROUND

Water Matters

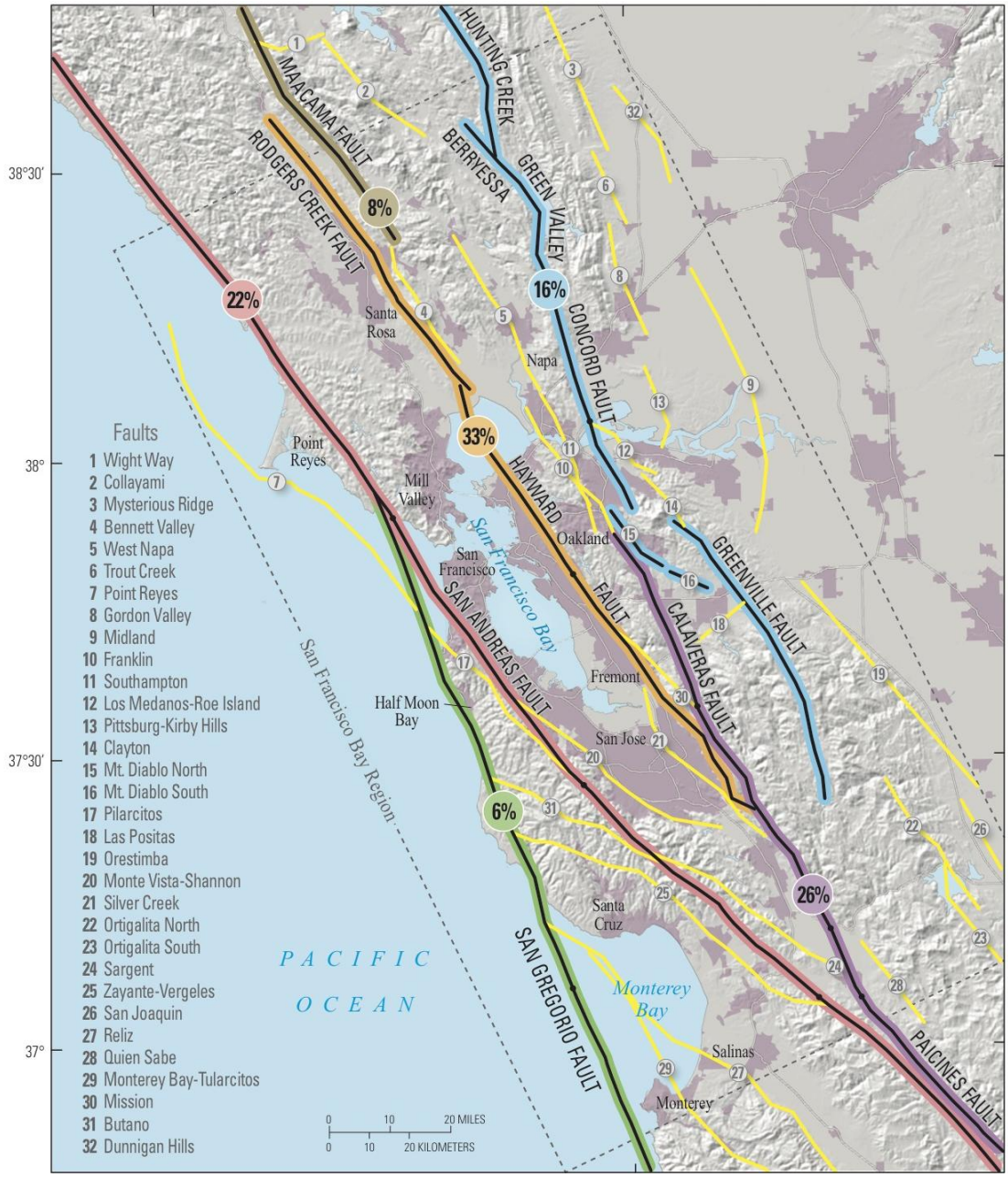
Clean drinking water is a basic service that everyone depends on. However, it can be at risk from earthquakes, fires, floods, terrorism, and drought.

Earthquakes (Will) Happen

The U.S. Geological Survey says there is a 72% chance that a magnitude 6.7 earthquake will hit the San Francisco Bay Area in the next 30 years. The San Andreas Fault, which caused the major 1906 earthquake in San Francisco (magnitude 7.8), runs through San Mateo County. The Hayward Fault runs through the East Bay[1] and is also expected to cause a large quake that could damage key infrastructure. In Figure 1, each colored circle shows the chance of a 6.7 or stronger earthquake happening on a fault by 2043. Thick, colored lines show major plate boundary faults. Thin yellow lines mark more minor faults.

[1] USGS, "Earthquake outlook for the San Francisco Bay region 2014–2043," Accessed May 2, 2025, https://pubs.usgs.gov/publication/fs20163020

Figure 1: Map of Earthquake Outlook for the San Francisco Bay Region 2014–2043[2]



[2] Map of known active geologic faults in the San Francisco Bay region | U.S. Geological Survey, Accessed May 2, 2025, https://www.usgs.gov/media/images/map-known-active-geologic-faults-san-francisco-bay-region

Risk and Resilience Assessment (RRA)[3]

Under Section 1433 of the Safe Drinking Water Act (SDWA), which was updated in 2018 by America's Water Infrastructure Act (AWIA), community water systems that serve more than 3,300 people must complete a risk and resilience assessment (RRA) and create an emergency response plan[4].

An RRA looks at the risks, threats, and possible damage from different hazards. According to the law, the RRA must cover:

- Risks from natural disasters and harmful human actions
- Strength of the system's parts, including pipes, water sources, treatment and storage sites, and automated systems
- How the system is monitored
- Financial systems that support the water system
- How the system uses, stores, or handles chemicals
- How the system is operated and maintained

Water systems must complete the RRA and send proof to the U.S. Environmental Protection Agency by the required deadlines. Every five years, they must review and, if needed, update the RRA and submit a new certification to the EPA.

Emergency Response Plan (ERP)[5]

Each community water system (CWS) must complete or update its ERP within six months after finishing its RRA. The ERP should include:

- Steps and tools to make the system stronger and more secure, including protection against physical and cyber threats.
- Plans, procedures, and equipment to use if a disaster or attack makes it hard to provide clean drinking water.
- Ways to reduce the effects of disasters or attacks on public health and water supply such as using backup water sources, moving water intakes, or building flood barriers.
- Methods to help detect threats that could harm the system.

After finishing the ERP, the EPA recommends training staff and partners on what's in the plan and what their roles are. A long-term training and practice schedule helps make sure both experienced and new team members know how to respond.[6]

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[3] EPA/AWIA, RRA Requirements and Assistance Resources for CWSs that Serve More than 3,300, Accessed May 3, 2025, https://www.epa.gov/waterresilience/awia-section-2013#RRA

[4] EPA/AWIA, America's Water Infrastructure Act of 2018 (AWIA), Accessed May 3, 2025, https://www.epa.gov/ground-water-and-drinking-water/americas-water-infrastructure-act-2018-awia

[5] EPA/AWIA, ERP Requirements and Assistance Resources for CWSs that Serve More than 3,300, Accessed May 3, 2025, https://www.epa.gov/waterresilience/awia-section-2013#ERP

[6] EPA/AWIA, Community Water System Emergency Response Plan Template and Instructions, Accessed May 29, 2025, https://www.epa.gov/sites/default/files/2019-07/documents/190712-awia_erp_template_instructions_kab_508c_v6.pdf

Water Sources

Most of the County's drinking water comes from the Hetch Hetchy Regional Water System, which includes the Hetch Hetchy reservoir in Yosemite National Park, over 130 miles away. This system is managed by the San Francisco Public Utilities Commission (SFPUC). In 2003, the Bay Area Water Supply and Conservation Agency (BAWSCA) was created to represent 26 cities, water districts, and private utilities that buy water from SFPUC. Sixteen providers in the County deliver SFPUC water to homes and businesses. A few small districts in the County don't use SFPUC water. Instead, they get their water from local wells and groundwater. For example, the Montara Water and Sanitary District, included in this report, uses only local sources.

These water providers differ in several ways. They serve different-sized areas and customer bases, have different water capacities, and vary in ownership. Some are city-run water districts, some are special districts led by elected boards, and others are investor-owned and regulated by the California Public Utilities Commission. Their service areas don't always match city boundaries. One city may have more than one water provider, and some providers serve parts of multiple cities.

Even though these providers operate independently, many of their systems are connected by "interties". These links let them share water during times of need.

Securing the Source

After 21 years of planning and building, SFPUC's $4.8 billion Water System Improvement Program (WSIP) is now 99% finished. The improvements made through the WSIP include building earthquake-resistant dams, aqueducts, underground tunnels, and 280 miles of large pipes. These pipes cross three major faults: Calaveras, Hayward, and San Andreas, along with many smaller faults.[7]

[7] San Francisco Public Utilities Commission, Water Infrastructure Improvements, Accessed May 3, 2025, https://www.sfpuc.gov/construction-contracts/water-infrastructure-improvements

Figure 2: Hetch Hetchy Regional Water System[8]

Hardening and modernizing vulnerable water infrastructure against a major earthquake is costly, disruptive, and impractical for individual water providers. Therefore, much of the local distribution system, between the SFPUC "turnout" to the water provider and their customers' taps, is likely to be older and more vulnerable to earthquake damage.[9]

County Oversight

No County agency is specifically assigned responsibility for the regulation of water providers.

The Key Role of Readiness: Plan, Practice, Evaluate

"The water system's training program should … include routine training drills, tabletop exercises, and possibly functional exercises, depending on the utilities['] resources. *…The water system should include all the key players in the training exercises, so everyone is familiar with emergency policies and procedures."*[10]

"Train as you fight; fight as you train – keep the training and exercises as close to real as possible because the skills and muscle memory developed are what will be called upon in the face of a real incident."[11]

- California State Water Board

Water service interruptions during an earthquake may be unavoidable, but how long and severe these interruptions are will depend largely on how prepared water providers and emergency

[8] https://bawsca.org/water/supply/hetchhetchy, accessed May 20, 2025

[9] Grand Jury interview

[10] 2015, *State Water Resources Control Board Division of Drinking Water Emergency Response Plan Guidance for Public Drinking Water Systems Serving a population of 3,300 or more*, accessed March 10, 2025, https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/documents/security/ddw_emergency_guidelines_0215.pdf

[11] California State Water Resources Control Board, "Water Resiliency", accessed March 10, 2025, https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/water_resiliency/

managers are. How do water providers plan for the potential chaos, obstacles, hazards, and other challenges an actual disaster may bring?
Both the EPA and FEMA, a key agency of the Department of Homeland Security, play important roles in helping water providers get ready for water emergencies.

The EPA offers tools that help agencies create their ERPs. According to the EPA, "... [t]he water sector should be involved in an ongoing cycle of planning, organizing, training, equipping, exercising, evaluating, and making corrective actions to stay ready for emergencies. This preparedness also boosts resiliency, which is essential for utilities to provide critical services during tough conditions."[12]

FEMA recognizes that well-organized practice sessions, like tabletop exercises, are a cost-effective, low-risk way to train staff, improve communication across organizations, and test plans, procedures, equipment, systems, tools, and facilities for emergency management. The government has put significant effort into supporting this goal. For instance, the Department of Homeland Security set up the Homeland Security Exercise and Evaluation Program (HSEEP) to train stakeholders like water and sanitation systems in creating and running key readiness exercises.[13]

An "After-Action Report" (AAR) is a formal review of an emergency preparedness exercise, such as a tabletop exercise. It highlights what worked well and what needs improvement, turning lessons learned into clear steps to enhance response efforts. It outlines the actions to be taken, assigns responsibilities, and sets a timeline for completing them.[14]

The lessons learned from the 1991 Oakland Hills fire and the 1989 Loma Prieta earthquake showed the value of mutual aid between water providers. This led to the creation of the California Water/Wastewater Agency Response Network (CalWARN), which now includes over 190 utilities across the state. CalWARN's mission is to promote statewide emergency preparedness, disaster response, and mutual assistance for public and private water and wastewater utilities.[15] Its network helps agencies find and share vital resources, such as equipment and personnel, during emergencies. The EPA recommends that water providers take part in mutual aid activities.[16]

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[12] EPA, "How to Develop a Multi-Year Training and Exercise (T&E) Plan", accessed March 12, 2025, https://www.epa.gov/sites/default/files/2015-05/documents/how_to_develop_a_multi-year_training_and_exercise_plan_a_tool_for_the_water_sector.pdf, See also NIH, "Use of After-Action Reports (AARs) to Promote Organizational and Systems Learning in Emergency Preparedness", accessed March 25, 2025, https://pmc.ncbi.nlm.nih.gov/articles/PMC3447598/

[13] FEMA, "Homeland Security Exercise and Evaluation Program (HSEEP)," accessed March 12, 2025, https://www.fema.gov/emergency-managers/national-preparedness/exercises/hseep

[14] San Francisco Department of Emergency Management, "Phase 4: After Action Report and Improvement Planning," accessed March 12, 2025, https://sfdem.org/phase-4-after-action-report-and-improvement-planning-0

[15] California Water/Wastewater Agency Response Network (CalWARN), Mission Statement, accessed March 12, 2025. https://www.calwarn.org

[16] EPA, "Water Sector Utility Incident Action Checklist," accessed March 12, 2025, https://www.epa.gov/system/files/documents/2021-10/incident-action-checklist-earthquakes_508c-final.pdf

SMCEM is in charge of coordinating preparedness, response, and protection for large-scale incidents and disasters across the county. SMCEM handles alerting, notifying, and working with appropriate agencies within the County's 20 cities and unincorporated areas when a disaster occurs. It also ensures resources are available and mobilized in times of crisis, develops disaster response and recovery plans, and provides preparedness materials for residents.[17]

Originally managed by the County Sheriff's Office as the Office of Emergency Services, SMCEM became a stand-alone department in 2021 under the County Executive's Office. It is funded through a Joint Powers Agreement (JPA) between the County and its 20 cities. SMCEM's approach to emergency preparedness involves four phases: preparedness, response, recovery, and mitigation.

For mitigation, SMCEM leads the development of the Multijurisdictional Local Hazard Mitigation Plan (LHMP). This plan, updated every five years, provides a framework for assessing risks from various natural and man-made disasters. An updated LHMP is also required to access certain FEMA funding to help cover local disaster expenses. The most recent plan, released in October 2021, includes specific mitigation actions from each of the 36 participating cities and districts. The Executive Summary of the 2021 LHMP Plan provides as follows:

> *"IMPLEMENTATION: The Steering Committee developed an implementation and maintenance strategy that includes monitoring of the plan's implementation, annual progress reporting, a strategy for continued public involvement, plan integration with other relevant plans and programs, and establishment of a subcommittee to oversee implementation progress.*[18]

The Steering Committee disbanded after adopting the 2021 LHMP, resulting in a lack of oversight for the plan's implementation. Our research and interviews revealed no documentation tracking the progress of mitigation projects outlined in the 2021 LHMP.

SMCEM is set to initiate the development of the next LHMP, expected to take approximately 16 to 18 months. The process has commenced with updating contact information for plan participants.

To enhance transparency, we recommend that SMCEM collect and report on the status of mitigation projects from the 2021 plan. This information should be included in the relevant partner annex when the updated plan is published in 2026, allowing residents to assess progress in reducing foreseeable risks.

Furthermore, we suggest that the responsibilities of the Steering Committee include annual reporting on the status of mitigations developed in the 2026 plan.

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[17] San Mateo County's Department of Emergency Management (SMCEM), accessed March 25, 2025, https://www.smcgov.org/dem

[18] 2021 Multijurisdictional LHMP | County of San Mateo, CA, accessed March 25, 2025, https://www.smcgov.org/ceo/2021-multijurisdictional-lhmp

METHODOLOGY

The Grand Jury reviewed the following documents from the water providers:

- Coastside County Water District ERP December 2024 Redacted
- Coastside County Water District RRA 2021
- East Palo Alto ERP 2022
- East Palo Alto Master Water Plan March 2022
- Community Water System Risk and Resilience Assessment Estero Municipal Improvement District
- Estero Municipal Improvement District Emergency Response Plan
- Montara MWSD ERP 07/18/2019 Redacted
- Montara MWSD RRA 08/10/2020 Summary Report Redacted
- Redwood City ERP 08/17/21
- Redwood City RRA 12/16/2020

We also reviewed:

- Bay Area Water Supply & Conservation Agency Annual Survey Fiscal Year 2022-2023
- Multijurisdictional Local Hazard Mitigation Plan October | 2021 Volume 2—Planning Partner Annexes
- County of San Mateo Emergency Operations Plan | Basic Plan
- San Mateo Grand Jury 2021-2022 Report: The Other Water Worry: Is Your Water Provider Prepared for the Big One?
- 2021 Multijurisdictional Local Hazard Mitigation Plan

DISCUSSION

Backup Water and Fuel

The SFPUC's seismic design guide says their goal for the Hetch Hetchy Water System Improvement Program is to restore 70% of winter water demand at customer connection points within 24 hours after a major earthquake. The Grand Jury found that local water providers believe the upgraded SFPUC system should be working within three days.[19] Based on interviews, the Grand Jury used a three-day emergency water supply as a general goal for these providers. However, their readiness varies. For instance, East Palo Alto still lacks enough water storage, and the Montara Water and Sanitary District only has enough diesel fuel to keep its emergency generators running for one day.

County Responsibilities

The 2022 Grand Jury noted that in a catastrophic event, SMCEM is responsible for alerting and coordinating agencies' responses, ensuring availability of resources, and developing plans for response and recovery.

The 2022 Grand Jury also noted that the EPA had published guidance for cooperation that is

[19] Grand Jury Interviews

needed between local emergency management agencies, such as SMCEM, and the water providers serving the local communities. Its recommendations include:

- Sharing contact information between the agencies and water providers;
- Joint training and exercises, and mutual facilities tours;
- Creating a "water desk" at the emergency agency; and
- Coordinating public messaging during a water emergency.[20]

The 2022 Grand Jury found a gap between these recommendations and SMCEM practices.

The current Grand Jury decided to follow up on this report to determine if any of these gaps have been closed. In our interviews with water providers and SMCEM, we determined that two of the gaps had been addressed. Contact information for water providers and agencies had been shared in the 2021 LHMP. Additionally, SMCEM appears to be well prepared to communicate to the public in an emergency situation.

However, other gaps remain. In our interviews, we determined that SMCEM had not implemented a water desk, had not conducted emergency water interruption exercises, and had not developed a coordination plan for emergency water interruption. To date, the SMCEM has conducted emergency preparedness exercises, but none have addressed catastrophic water interruption.

FINDINGS

The following findings apply to the specific governing bodies identified under "Request for Responses" below:

F1. The County Department of Emergency Management has not followed EPA recommendations that it coordinate disaster responses with County water providers, which may compromise its ability to execute a response to a catastrophic interruption in water distribution service.

F2. The water provider does not have three (3) days of emergency water storage, potentially compromising its ability to supply water following a catastrophic interruption in water distribution service.

F3. The water provider does not have three (3) days of emergency fuel storage, affecting its ability to supply water following a catastrophic interruption in water distribution service.

F4. The water provider could not produce documentation analyzing past exercises to test readiness and improve their performance, impacting their ability to supply water following a catastrophic interruption in water distribution service.

F5. The water provider does not perform operational Functional or Full-Scale exercises, compromising the clarity of roles and responsibilities, and helping identify resource gaps.

[20] Connecting Water Utilities and Emergency Management Agencies, accessed May 21, 2025 https://www.epa.gov/sites/default/files/2018-05/documents/water_emaconnection.pdf

F6. Local agencies are responsible for oversight of the status of their Local Hazard Mitigation Plans, published in October 2021. While local jurisdictions remain responsible for implementation, there is no central repository reporting on overall progress.

RECOMMENDATIONS

The following recommendations apply to the specific governing bodies identified under "Request for Responses" below:

R1. The Grand Jury recommends that by December 31, 2025, the San Mateo County Department of Emergency Management develop a plan to align its policy with EPA recommendations by coordinating disaster response preparedness with all county water providers.

R2. The Grand Jury recommends that by December 31, 2027, the water provider will develop plans to increase emergency water storage capacity sufficient to provide emergency water to its community for a minimum of three (3) days.

R3. The Grand Jury recommends that by December 31, 2026, the water provider develop plans to increase emergency fuel and pumping capabilities in order to provide emergency water to their community for a minimum of three (3) days.

R4. The Grand Jury recommends that by December 31, 2025, the water provider perform an analysis and document an After-Action Report consistent with its emergency response plan.

R5. The Grand Jury recommends that by June 30, 2026, the water provider perform, at a minimum, functional operational exercises consistent with its emergency response plans (ERP).

R6. The Grand Jury recommends that by October 31, 2026, SMCEM report on the status of the mitigation projects contained in the 2021 and upcoming 2026 LHMP plans. The status of the 2021 projects should be included in the relevant partner annex when the plan is published in 2026.

REQUEST FOR RESPONSES

Pursuant to Penal Code Section 933.05, the Grand Jury requests responses from the following governing bodies:

Respondents	F1	F2	F3	F4	F5	F6	R1	R2	R3	R4	R5	R6
Coastside County Water District												
East Palo Alto		X	X	X	X			X	X	X	X	

Estero Municipal Improvement District			X						X			
Montara Water and Sanitary District			X		X				X		X	
Redwood City												
San Mateo County Board of Supervisors	X					X	X					X

The governing bodies indicated above should be aware that the comment or response of the governing body must be conducted subject to the notice, agenda, and open meeting requirements of the Brown Act.

RESPONSE REQUIREMENTS

California Penal Code Section 933.05 provides as follows (emphasis added):

(a) For purposes of subdivision (b) of Section 933, as to each grand jury finding, the responding person or entity shall report one of the following:

(1) The respondent **agrees** with the finding.

(2) The respondent **disagrees** wholly or partially with the finding, in which case the response shall **specify the portion of the finding that is disputed and shall include an explanation of the reasons therefor**.

(b) For purposes of subdivision (b) of Section 933, as to each grand jury recommendation, the responding person or entity shall report one of the following actions:

(1) The recommendation has been implemented, **with a summary regarding the implemented action.**

(2) The recommendation has not yet been implemented but will be implemented in the future, **with a timeframe for implementation.**

(3) The recommendation requires further analysis, **with an explanation and the scope and parameters of an analysis or study, and a timeframe for the matter to be prepared for discussion by the officer or head of the agency or department being investigated or reviewed, including the governing body of the public agency when applicable. This timeframe shall not exceed six months from the date of publication of the grand jury report.**

(4) The recommendation will not be implemented because it is not warranted or is not reasonable, **with an explanation therefor.**

GLOSSARY

AAR - An After-Action Report evaluates an emergency response exercise. It is designed to assess the performance of exercise objectives and capabilities by documenting strengths, weaknesses, and corrective actions.

AWIA - America's Water Infrastructure Act improves drinking water and water quality, deepens infrastructure investments, and enhances public health and quality of life. The AWIA provisions are the most far-reaching changes to the Safe Drinking Water Act, with over 30 mandated programs.

BAWSCA - The Bay Area Water Supply and Conservation Agency is a consortium formed by the State of California and major water providers in the San Francisco Bay Area for the purpose of negotiating water purchases to buy water from the Hetch Hetchy Regional Water System.

CalWARN - California Water/Wastewater Agency Response Network. CalWARN's mission is to support and promote statewide emergency preparedness, disaster response, and mutual assistance processes for public and private water and wastewater utilities.

CWS - A Community Water System consistently supplies water to at least 25 people or 15 service connections year-round and is either publicly or privately owned.

EMID - Estero Municipal Improvement District

EPA - Environmental Protection Agency

ERP - An Emergency Response Plan is a structured set of procedures that organizations follow to prepare for, respond to, and recover from emergencies or disasters. It outlines key roles, responsibilities, communication strategies, and actions to take during events like natural disasters, fires, medical emergencies, or security threats.

FEMA - Federal Emergency Management Agency

HSEEP - Homeland Security Exercise and Evaluation Program

LHMP - Multijurisdictional Local Hazard Mitigation Plan 2021. Thirty-six local governments and special districts in San Mateo County began working together to update the San Mateo County Multijurisdictional Local Hazard Mitigation Plan

MWSD - Montara Water and Sanitary District

RRA - Risk and Resilience Assessment

SDWA - The Safe Drinking Water Act is a U.S. federal law enacted in 1974 to protect the quality of drinking water. It authorizes the Environmental Protection Agency (EPA) to set national standards for drinking water safety, covering both naturally occurring and man-made

contaminants. The law applies to all public water systems (but not private wells) and ensures that drinking water meets health-based standards.

SFPUC - The San Francisco Public Utilities Commission owns and controls the water that flows from the Hetch Hetchy Regional Water System to water providers in the Bay Area.

SMCEM - San Mateo County Emergency Management. The Department of Emergency Management (SMCEM) coordinates countywide preparedness, response, and protection services and activities for large-scale incidents and disasters. SMCEM is responsible for alerting, notifying, and coordinating with appropriate agencies within the county's 20 cities and unincorporated county areas when disaster strikes.[21]

SWRCB - State Water Resources Control Board

UWMP - Urban Water Management Plans (UWMPs) are prepared by urban water suppliers every five years. These plans support the suppliers' long-term resource planning to ensure adequate water supplies are available to meet existing and future water needs. The information collected from UWMPs is useful for local, regional, and statewide water planning.[22]

WSIP - The Water System Improvement Program (WSIP) is a multi-year capital program that is $4.8 billion to upgrade the SFPUC's regional and local water systems. The program repairs, replaces, and seismically upgrades crucial portions of the Hetch Hetchy Regional Water System.

WSMP - City of East Palo Alto "Water System Master Plan"

[21] California Department of Water Resources, Urban Water Management Plans, Accessed May 12, 2025, https://water.ca.gov/Programs/Water-Use-And-Efficiency/Urban-Water-Use-Efficiency/Urban-Water-Management-Plans

[22] County of San Mateo, Emergency Management, Accessed May 12, 2025, https://www.smcgov.org/dem

APPENDIX

Federal Oversight

Several federal agencies help regulate and oversee water providers in San Mateo County.[23] One of the most important factors in this investigation is the Environmental Protection Agency (EPA). The EPA enforces the America's Water Infrastructure Act of 2018 (AWIA), which applies to water providers serving more than 3,300 people. Under AWIA, these providers must complete a Risk and Resilience Assessment. This assessment covers threats from natural disasters and intentional attacks. It also evaluates how well a water system's infrastructure and operations, including cybersecurity, can withstand those risks. AWIA also requires providers to create an Emergency Response Plan (ERP). This plan must include steps and strategies to handle the risks identified in their Resilience Assessment. Water providers had to certify and send their ERPs to the EPA by December 31, 2021.[24]

The EPA provides online tools and other resources to help utilities meet these AWIA requirements.[25] It also recommends that providers run tabletop exercises to test their emergency plans.[26]

State Oversight

California has many state departments, councils, agencies, and commissions that play a role in water service. For emergency preparedness, the California Water Code requires water providers that serve more than 3,000 customers or deliver over 3,000 acre-feet of water per year to create an Urban Water Management Plan (UWMP). This plan, which must be submitted to the Department of Water Resources, outlines how the provider will respond to a reduced water supply. It should include steps to handle water shortages caused by natural disasters. Providers must update their UWMPs every five years.[27]

Some water providers are private, investor-owned companies. These companies are regulated as public utilities by the California Public Utilities Commission, which oversees their rates and operations. The largest provider in San Mateo County is the California Water Service Company, which is investor-owned.

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[23] E.g., Department of Homeland Security, Department of Defense, Department of the Interior, Department of Agriculture, Department of Energy, and Department of Health and Human Services. Cody, Schneider, Tiemann, *Selected Federal Water Activities: Agencies, Authorities, and Congressional Committees*, Congressional Research Service, 2017

[24] EPA, "America's Water Infrastructure Act: Risk Assessments and Emergency Response Plans", accessed March 11, 2025, https://www.epa.gov/waterresilience/awia-section-2013

[25] EPA, "Vulnerability Self-Assessment Tool (VSAT): Protect Your Community From Risk", accessed March 11, 2025

[26] EPA, "Tabletop Exercise Tool for Water Utilities", accessed March 11, 2025 https://www.epa.gov/waterresiliencetraining/tabletop-exercise-tool-water-utilities-emergency-preparedness-response-and

[27] 2022, California Department of Water Resources, "Urban Water Management Plans", accessed March 10, 2025, https://water.ca.gov/Programs/Water-Use-And-Efficiency/Urban-Water-Use-Efficiency/Urban-Water-Management-Plans

Overview of Water Providers Investigated

Water Provider	Provider Type	Population Served (2023)[28]
Montara Water and Sanitary District	Special District	6,012
Coastside County Water District	Special District	18,890
East Palo Alto	Municipal Water District	25,519
Estero Municipal Improvement District	Special District	37,443
Redwood City	Municipal Water District	90,928

As noted in the 2021-22 Grand Jury report, each provider has prepared, self-certified, and submitted a Resiliency Assessment and an Emergency Response Plan (ERP) to the EPA, as required by the AWIA.

Montara Water and Sanitation District (MWSD)

The Montara Water and Sanitary District (MWSD) was created in 1958 to manage wastewater services for Moss Beach and Montara. In 2003, following a legal dispute and approval of a local bond measure, MWSD acquired the area's drinking water system from Citizens Utilities Company of California.

MWSD is governed by a five-member elected board and supported by a staff of seven. The General Manager oversees daily operations. Unlike most Bay Area districts, MWSD sources its water from wells and surface streams in the Montara Mountain watershed. Before reaching customers, the water is filtered, disinfected, and tested for safety. It meets all state and federal quality standards and is treated to reduce nitrates and manganese.

The district stores more than one million gallons of water in several tanks. This supply can last about five days under normal use, or over three days during high demand. Pumps and tank levels are managed through a Supervisory Control and Data Acquisition (SCADA) system. If needed, the entire system can be operated manually. Because the SCADA system does not manage chemical treatment, the risk from cyberattack is lower.

MWSD depends on electricity from PG&E to power its pumps. If the power goes out, diesel generators located near the pumps provide backup. However, the District only has enough diesel fuel to keep them running for about 24 hours.

[28] BAWSCA.org member agency profiles, accessed May 4, 2025, https://bawsca.org/members/profiles

MWSD participated in the 2021 Multijurisdictional Local Hazard Mitigation Plan (LHMP), released in October 2021. In that plan, MWSD identified a major risk: limited backup power. As a mitigation, Action MWS-4 proposed buying stationary generators for key sites like wells, pumps, and treatment facilities, and building enough storage for equipment and fuel. So far, the district has considered—but rejected—a plan to install a diesel storage tank, citing concerns about environmental impacts. MWSD has since stated its goal to revise the plan and build the tank by the end of 2026. In the meantime, MWSD believes it could get emergency diesel from the Princeton Harbor District or local contractors. While the District has strong relationships with these sources, there are no contracts in place to guarantee priority access.

In December 2024, MWSD held a tabletop emergency drill that simulated a tsunami and a 6.5 earthquake. The exercise covered a 48-hour response window. The after-action report showed that the district prioritized providing water for firefighting and ensuring disinfection. We found no record of MWSD conducting operations-based or multi-agency emergency exercises.

MWSD submitted its Emergency Response and Recovery Plan (ERP) in July 2019 and its Risk and Resilience Assessment (RRA) in August 2020, as required by law. These plans must be updated every five years, but there is no sign they have been updated since then.

MWSD maintains a good working relationship with the Coastside County Water District and occasionally shares materials and supplies. However, they have not signed any formal mutual aid agreements. MWSD also reports no interaction with the Department of Emergency Management.

Coastside County Water District (CWD)

The Coastside County Water District was established in 1947. It supplies treated water to the City of Half Moon Bay and the nearby unincorporated areas of Princeton, Miramar, and El Granada. A team of 22 people, overseen by an elected board, serves about 19,000 residents through 7,700 water connections. Coastside Water manages and treats all its own water. Most of the supply is pumped from the Crystal Springs Reservoir, located inland beyond the coastal mountains. Staff members live on the coast and can respond to emergencies in about 30 minutes. The current board emphasizes staying ahead on infrastructure upkeep.

To lower risks, the district continues to invest in system improvements. Projects include a seismically upgraded 2.1-million-gallon storage tank, a $9 million renovation of its treatment plant, and pipeline repairs along Highway 92. To protect pipelines from future damage, the district is moving them away from roads and creeks using easements. In the coming decade, storage capacity is expected to double at its Carter Hill tank site. New tanks will also help with managing water use. As of now, stored water can last about 3 to 4 days, depending on the season.

The district has stored 5,000 gallons of diesel and 1,000 gallons of gasoline, enough to power its systems for up to 25 days. It also has backup fuel agreements with contractors based both on the Coast and in Redwood City.

The SCADA (Supervisory Control and Data Acquisition) system tracks water operations in real

time. The team has put cybersecurity protections in place, such as penetration tests and phishing drills.

Coastside Water performs regular water quality tests, as required by both state and federal rules. It works with BAWSCA and SFPUC on infrastructure planning and emergency drills. Earthquakes and wildfires are the main risks. The district reduces wildfire threats by clearing brush, removing trees, and improving pumping systems. It also boosts system reliability through upgraded booster pumps and pipelines that help move water efficiently across the region.

District teams hold frequent meetings and update the Emergency Response Plan (ERP) often. They run emergency drills 3–4 times a year with agencies like CalFire and SFPUC, along with 25 yearly training sessions, weekly safety meetings ("tailgates"), and ongoing certifications. They also join Community Emergency Response Team (CERT) exercises and maintain ham radio communication. The district works with SMCEM on emergency responses. A 2021 Risk and Resiliency Assessment led to key operational and cybersecurity upgrades, and the next review is set for 2026.

Coastside Water joined the 2021 Multijurisdictional Local Hazard Mitigation Plan, published in October 2021. In that plan, the district flagged a risk: not enough backup power at Crystal Springs. They proposed Action CWS-6: buying and maintaining generators for vital facilities and systems, like tanks, treatment plants, pump stations, and pipelines—especially those at risk from earthquakes or wildfires.

To reduce that risk, Coastside Water has taken several proactive steps. They now use gravity-fed systems, such as Pilacitos Reservoir and Denniston Creek, to keep water flowing during outages. They also installed siphons and pumps at Pilacitos to help move water into the system when levels are low. These actions directly address the backup power issue at Crystal Springs and support the district's broader goal of keeping water service running during power failures.

City of East Palo Alto

The City of East Palo Alto's water system is managed through a public-private partnership between the City and Veolia North America (Veolia). Most of the City is served by this system, but two smaller, independent water providers also operate within city limits: the Palo Alto Park Mutual Water Company and the O'Connor Tract Co-operative Water Company. The City's water service area includes 4,065 customer connections. Of these, 92% are for homes, and the rest serve businesses, industries, institutions, and other users. In 2022, the population in the City's service area was estimated at 23,646 (City of East Palo Alto, 2016, and Department of Finance, 2022). By 2045, that number is expected to grow to 33,230.[29]

The city buys all its treated water from the San Francisco Public Utilities Commission (SFPUC). Water flows through three pressure-reducing stations and is distributed through 137 water mains, which cross 20 easements.

[29] City of East Palo Alto "Water System Master Plan" https://www.cityofepa.org/sites/default/files/fileattachments/public_works/project/21359/epa_wsmpreport_update_2023-03-22_wappendices_ver2.pdf

The Public Works Department runs the water utility and conducts tabletop emergency drills that include local fire and police departments. One such drill in 2023 led to updates in the Emergency Response Plan (ERP). However, no after-action report was available to explain what worked, what needed fixing, or what follow-up actions were planned.

The city currently has no water storage tanks, but the State Water Resources Control Board (SWRCB), through the Department of Drinking Water (DDW), requires the city to build storage for emergencies and firefighting. The City's Water System Master Plan (WSMP) outlines how to size these new storage tanks. According to the plan, 3.6 million gallons (MG) of storage is needed for today's needs, and 5.2 MG will be needed in the future to support growth. The city knows storage is a problem and is working to fix it through the WSMP, which also addresses aging pipes and infrastructure. One storage project, which will add 1.65 MG of capacity, is almost done. But this still leaves a shortfall of 2.86 MG. More storage is planned, though final approval has not yet been given.

Backup power generators are also planned for the new storage facilities. But if a major event—like an earthquake—cuts off electricity, the only current backup is the fuel-powered pump at Gloria Way Well. That alone is not enough to meet the community's needs.

The city also needs backup fuel for the pump generators in case of a power loss during a disaster, but this need has not yet been addressed.

Redwood City

Redwood City supplies water to customers within its city limits and parts of unincorporated San Mateo County, including Emerald Hills and Redwood Shores. The city provides water to homes, businesses, industries, and government buildings. All drinking water is purchased from the San Francisco Public Utilities Commission (SFPUC). The city also operates a recycled water program for non-drinking uses. As of 2023, Redwood City serves 24,249 connections and provides water to a population of 90,928. That number is expected to grow to 107,947 by 2045.

The Public Works Department manages the City's water system. To stay prepared for emergencies, the department holds discussion-based emergency planning exercises twice a year and runs hands-on operations-based drills once a year. After these drills, the city creates after-action reports to record what went well, what could be better, and what steps should be taken next.

Redwood City has 13 water storage tanks with a total capacity of about 2.2 million gallons. This amount is enough to last around three days under typical usage. To help keep water flowing during power outages, the city has 10 diesel-powered pump stations that can operate for up to 24 hours.

Estero Municipal Improvement District (Foster City)

The Estero Municipal Improvement District (EMID) provides water service to all of Foster City and part of the City of San Mateo, known as Mariners Island, which is just west of Foster City. EMID delivers water to homes, businesses, and a small number of industrial users.[30] In 2023, EMID served about 37,443 people through 8,170 service connections. All of the district's water comes from the San Francisco Public Utilities Commission (SFPUC). Water is stored in tanks located in the northwest part of the district. The system includes two pressure-reducing stations, four storage tanks, one pump station, and one pressure zone. For emergencies, EMID has backup water connections with California Water Service (San Mateo) and Mid-Peninsula Water District.[31]

The Foster City Public Works Department manages EMID. It maintains two emergency connections: one with Cal Water San Mateo and one with Mid-Peninsula Water. The connection with Mid-Peninsula Water is tested each year to ensure it works properly during an emergency. To get ready for major disasters, the city held a tabletop earthquake exercise in October 2024. The event included Police, Fire, and Public Works staff. Interviews showed that more tabletop exercises might be planned in the future as staffing changes occur, though no schedule was shared. A report summarizing the exercise listed successes, areas needing improvement, and next steps.

EMID recently improved its water storage by upgrading tanks. The district now has one 8-million-gallon (MG) concrete tank and three 4-million-gallon steel tanks. These tanks have been coated, retrofitted for earthquakes, and equipped with water quality mixers. The upgrades provide enough water for at least two days. Previously, water quality issues limited how much water could be stored. Thanks to the improvements, the storage capacity may grow to support three or more days of use soon.

[30] Estero Municipal Improvement District, 2020 Urban Water Managment Plan, accessed May 4, 2025, https://www.fostercity.org/sites/default/files/fileattachments/public_works/page/32041/final_draft_2020_emid_uwmp_wappendices.pdf

[31] Estero Municipal Improvement District, accessed May 4, 2025, https://bawsca.org/members/profiles/estero