



Via U.S. Certified Mail & Email ([grandjury@marincounty.org](mailto:grandjury@marincounty.org))

September 08, 2022

The Honorable Judge James Chou  
Marin County Superior Court  
P.O. Box 4988  
San Rafael, CA 94913-4988

Deborah Haase, Foreperson  
Marin County Civil Grand Jury  
3501 Civic Center Drive, Room #275  
San Rafael, CA 94903

**Re: 2021-2022 Marin County Civil Grand Jury Report- "A Roadmap to Water Resilience for Marin Municipal Water District"**

Honorable Judge Chou and Foreperson Hasse:

Pursuant to Penal Code Section 933.05, below please find the Marin Municipal Water District's (District) responses to the findings and recommendations set forth in the 2021-2022 Marin County Civil Grand Jury's report entitled, "A Roadmap to Water Resilience for Marin Municipal Water District". The District appreciates the effort of the 2021-2022 Marin County Civil Grand Jury in developing this report as well as the opportunity to provide a response.

**I. Responses to Findings**

**F1. The prospect of Marin Municipal Water District's reservoirs running dry within a year shows that the District has fallen short in its efforts to ensure a long-term resilient supply of water for its customers. The District and its ratepayers are vulnerable to the increasing likelihood of water shortfalls.**

**The District wholly disagrees with this finding.**

The western states are in the midst of a 22-year drought, the longest in the past 1,200 years, which has impacted water security in all western states. Historic drought conditions impacted the District's water supply due to two consecutive dry winters with extremely low rainfall and runoff. Total rainfall was 35.3 inches (67.9% of average) in water year 2020 and 20.7 inches (39.8% of average) in water year 2021. This period was the driest 2-years in 44 years (or driest 21-months in 97 years) and the District has been responding to this historic shift in rainfall due to climate-change driven conditions, as are most water agencies in the arid west. Further, during the recent water shortage emergency, the District took all necessary and appropriate

steps to assure continued water service to its customers, including extensive conservation incentives and new water use rules, increasing its purchase of water from Sonoma Water's winter river flows and pursuing an emergency intertie project to the east to augment supplies.

**F2. Due to a failure to fully develop and act on long-term water resilience plans, Marin Municipal Water District left itself with only the expensive Richmond Bridge pipeline option for responding to the drought emergency, which could have preempted pursuit of other means of establishing long-term water resilience.**

**The District wholly disagrees with this finding.**

In response to the severe drought in 1976-77, the District connected to the Sonoma Water aqueduct, and has continued to seek out additional water supply opportunities, including a comprehensive program to permanently reduce water demand through greater reuse and increased efficiencies. Soulajule Reservoir was built in 1980 and utilized by the District as drinking water supply in the two major droughts since – 1990 and 2021. The District also doubled the capacity of Kent Lake in 1982 by raising Peters Dam, resulting in a 51% increase (27,000 AF) in local storage volume.

The District has continued over the years to increase our water supply by escalating investments with our Sonoma Water partners starting in 1976, and continuing in 1988 and 1996, along with a recent investment to rehabilitate the Kastania pump station in 2021. These significant efforts have already added significant resiliency to our water supply.

Since the early 1980s, the District has also pioneered the use of recycled water in Northern California, constructing a pilot plant initially in the 1977 drought, completing a 1-MGD recycled water treatment plant in 1981, and expanding the treatment facility to 2-MGD in 1990. Early investment in recycled water treatment facilities rendered the District the first water supplier in Northern California to use recycled water for non-agricultural purposes, such as: car washes, air-conditioning cooling towers, a commercial laundry, toilet flushing in a condominium complex and a large hotel. In 2019, the District, in partnership with Las Gallinas Valley Sanitary District (LGVSD), funded a membrane filtration upgrade and expansion of LGVSD's Recycled Water Facility, a state of the art membrane treatment plant located at and operated by LGVSD. The new water treatment plant came online in 2021 and production capacity is now 5 million gallons per day, an estimate 400% increase. The District has a longstanding partnership with LGVSD and the recent expansion will support long-term growth of recycled water use in the service area. See <http://www.lgvsd.org/facilities/wastewater-treatment/recycled-water-facility/>

**F3. Marin Municipal Water District has not adequately addressed climate change in developing its long-term water supply plans to date. Relying on historical data to predict future rainfall is not sufficient given ongoing and future changes in the climate.**

**The District partially disagrees with this finding**

District water supply planning efforts over the past decade have incorporated the best available data to assess impacts on rainfall, runoff, and temperatures from climate change. The available data and research on the potential impacts of climate change have continued to evolve. The 2017 Water Resources Plan 2040 (WRP) incorporated climate change data from the Pepperwood Preserve's Climate Ready North Bay initiative (Pepperwood Preserve, 2015). The climate change precipitation, inflow, and temperature data used in the District's water supply model was derived from Pepperwood using a basin characterization model developed by USGS to downscale the impacts of the CCSM4\_rcp85, CNRM\_rcp85, MIROC\_ESM\_rcp85, and GFDL\_A2 Global Circulation Models (GCMs) to the District's watershed (Pepperwood, 2015). The lowest inflow scenario from these GCMs, MIROC\_ESM\_rcp85, was used as the climate change reliability threat discussed throughout the WRP 2040. Based on the modeling performed in 2017, there were no predicted shortages through 2040 under the modeled climate change scenarios, although overall reservoir levels were projected to significantly decrease under the modeled climate change conditions.

For the development of the 2020 Urban Water Management Plan (UWMP), all water utilities in California were required to consider historical drought hydrology, plausible changes on projected supplies and demands under climate change conditions, anticipated regulatory changes, and other locally applicable criteria. In developing the 2020 UWMP, the District used demand factors considering both the 2011-2013 period, in which customers increased their water use (in part due to the drought conditions, prior to the imposed restrictions), as well as the observed rebound in demand following the drought (2017-2019). Therefore, the periods used to develop the demand projections reflect conditions representative of the hotter, drier weather expected as a result of climate change.

Given ongoing and future changes in the climate, the District agrees that relying on historical data to predict future rainfall is not sufficient. The incorporation of best available climate change data as it evolves is key for long-term water supply planning under unknown future conditions. The District is currently conducting a Strategic Water Supply Assessment with the assistance of Jacobs Engineering, which will incorporate the most advanced data and modeling available in climate change planning.

**F4.** *Even with ongoing successful conservation efforts, Marin Municipal Water District will need additional sources of water and storage capacity to provide a long-term reliable water supply for its ratepayers.*

**The District agrees with this finding.**

**F5.** *Marin Municipal Water District has been slow to adopt proven Advanced Metering Infrastructure technology, which could enhance conservation by providing the District and its customers with real time data on water use and repairable leaks.*

**The District wholly disagrees with this finding.**

Starting in 2017, the District initiated a pilot Advanced Metering Infrastructure (AMI) project and has installed over 5,000 AMI meters within the service area of 61,000 meters. Adoption of AMI is an expensive and labor-intensive investment with many industry standards still being established and the technology advancing rapidly. Similar to other agencies in the Bay Area, the District initially conducted a pilot study of this technology, followed by an AMI Feasibility Study in 2020 to determine an effective path forward. An implementation plan for system-wide AMI within the service area is under development.

In the near-term, the District has successfully supported and fostered the use of Flume devices by a broad array of District customers. While Flume does not provide point source data to the District in every case, it does provide aggregated data from Flume users within the District, which has been, and can continue to be, used by the District to analyze quantitative and geographic use patterns. More significantly, the Flume device provides real time notifications and use information to user customers about their water usage, including leaks, similar to an AMI system.

**F6.** *Marin Municipal Water District could enhance its water resilience by constructing an East Bay pipeline for importing additional water. This option would also enable MMWD to participate in a regional desalination project and add storage capacity in the Los Vaqueros Reservoir.*

**The District agrees with this finding.** The District has commenced environmental review of the East Bay Intertie pipeline and this is one of the alternatives being assessed as part of the Strategic Water Supply Assessment.

**F7.** *Marin Municipal Water District could improve its water supply resilience by restructuring its relationship with the Sonoma County Water Agency in order to increase imports and potentially develop additional storage capacity.*

**The District agrees with this finding.** The District is in ongoing discussions with the Sonoma County Water Agency and its other water contractors towards increased water supply resiliency. The District agrees that this collaboration could increase the District's water supply resiliency and this is one of the alternatives being assessed as part of the Strategic Water

Supply Assessment.

**F8. Drought-proof supplies of water will become increasingly important in the coming years, with climate change-induced droughts expected to become more frequent and severe.**

**The District partially disagrees with this finding.** The District notes that the Report fails to define its use of the term "Drought-proof supplies of water". What constitutes a drought-proof water source will depend on the variability of drought conditions, which have intensified in recent years due to climate change. As stated above, the District is engaged in a Strategic Water Supply Assessment that will consider water supply under various water shortage scenarios, including best predictions of climate change impacts, to determine options based on a number of factors and variables.

**F9. Marin Municipal Water District has failed to place sufficient priority on development of drought-proof sources of water, such as recycling programs and regional desalination projects.**

**The District wholly disagrees with this finding.**

What constitutes a drought-proof water source will depend on the variability of drought conditions, which have intensified in recent years due to climate change. Since the early 1980s, the District has pioneered the use of recycled water in Northern California, constructing a pilot plant initially in the 1977 drought, completing a 1-MGD recycled water treatment plant in 1981, and expanding the treatment facility to 2-MGD in 1990. Early investment in recycled water treatment facilities rendered the District as the first water supplier in Northern California to use recycled water for non-agricultural purposes, such as: car washes, air-conditioning cooling towers, a commercial laundry, toilet flushing in a condominium complex and a large hotel. In 2019, the District, in partnership with Las Gallinas Valley Sanitary District (LGVSD), funded an expansion of LGVSD's Recycled Water Facility, a state of the art membrane treatment plant located at and operated by LGVSD. The new facility came online in 2021 and production capacity is now 5 million gallons per day, an estimate 400% increase. The District has a longstanding partnership with LGVSD and the recent expansion will support long-term growth of recycled water use in the service area.

In 2006, the District installed a pilot desalination facility to further understand this supply alternative. Both of these options, recycling and desalination, are alternatives being considered as part of the Strategic Water Supply Assessment. The financing and construction of a desalination facility by the District will require District voter approval.

**F10. The use of direct potable reuse presents a reliable, drought-proof, and cost-effective option for securing a substantial volume of additional potable water from within the Marin Municipal Water District.**

**The District partially disagrees with this finding.**

While the use of direct potable reuse may present a reliable and drought-proof option for securing additional potable water in the future, is not now permitted under California law, new

regulations are expected December 2023. The recycling criteria is actively under review and revision with many unknowns still to be determined. The cost-effectiveness and ultimate viability of direct potable reuse for the District will be dependent on the final recycling criteria incorporated into the regulations. Once the use becomes a legal water supply alternative, the District will be able to evaluate whether this option would be viable and cost-effective for the District. This has not prevented the District from investing in water reuse by expanding the LGVSD facility and contributing to a reuse feasibility study by the Central Marin Sanitation District.

**F11.** *The use of direct potable reuse is a potentially more efficient and impactful use of wastewater, as compared to recycling that wastewater for non-potable use in a “purple pipe” system.*

**The District partially disagrees with this finding.**

Direct Potable reuse is, in theory, more efficient than purple pipe in that the treated water could be introduced directly to the distribution system and does not require a second pipe network. Unfortunately, this has never been done in California and presents a level of risk that would not be the best use of the District's resources at this time. Possible challenges include regulating treated water temperatures and addressing possible emerging pollutant constituents. The District also needs to carefully weigh the use of wastewater which may be necessary to dilute the brine from a possible future desalination plant.

**F12.** *Desalination is a feasible, drought-proof option for producing additional water for the Marin Municipal Water District.*

**The District partially disagrees with this finding.**

While the District agrees that desalination is a proven technology, the feasibility of this option for the District requires further analysis and must take into account the interest of District voters. The District has conducted a yearlong pilot program and has a certified Environmental Impact Report. Given the voter-adopted initiative in 2010, however, the District must seek voter approval for the financing and construction of a desalination plant before proceeding. Additionally, Desalination as a water supply option may be prohibitively expensive, depending on the extent of grant funding and regional North Bay participation.

**F13.** *Marin Municipal Water District participation in a large-scale regional desalination project is likely the most feasible desalination option that could provide an additional drought-proof source of water.*

**The District wholly disagrees with this finding.**

A large-scale regional desalination plant will require an intertie to be constructed across the bay which will add significant time and costs. Furthermore, a number of agreements to wheel the water to District customers will be necessary adding uncertainty, time and expense. In particular, the East Bay Municipal Utility District (EBMUD) has established board adopted Wheeling Principles that could rule out the use of EBMUD facilities to reliably wheel water. A local desalination plant at 10-MGD or 15-MGD of capacity

would appear to have a lower cost per acre-foot and a greater level of reliability. The District is also investigating the potential for a brackish groundwater desalination facility to produce up to 5-MGD located in the Petaluma groundwater basin. Brackish water desalination is expected to be more cost effective and have potentially fewer environmental concerns than a bay desalination plant.

**F14.** *The measures needed to secure long-term water resilience will require additional funding and higher water rates for Marin Municipal Water District's ratepayers.*

**The District agrees with this finding.**

**F15.** *Marin Municipal Water District would improve its chances of receiving federal and state water resilience grant money by participating in regional partnerships.*

**The District agrees with this finding.** The District has been a member of the Sonoma-Marin Water Saving Partnership as well as the Bay Area Regional Reliability partnership for many years. The District has, and continues, to look for regional partnerships to enhance potential funding sources and grant opportunities for the benefit of District customers.

**F16.** *Marin Municipal Water District could significantly enhance water supply resilience and improve risk management during droughts, earthquakes, and other natural disasters by increasing its participation in regional partnerships with other water agencies.*

**The District agrees with this finding.** See response to F15. Additionally, the District is a member of CalWARN, an industry support network that fosters mutual aid in response to emergencies.

## **II. Responses to Recommendations**

**R1.** *By September 30, 2022, the Marin Municipal Water District should commit to securing 10,000 to 15,000 AF per year of additional water supply before 2035.*

**This recommendation requires further analysis.** The District is undertaking a rapid but thorough evaluation of water supply including determining how much water supply is needed, what options there are to provide water supply, how much these options will cost and how these options will perform in drought conditions. It is likely that the final determination for these questions will be made sometime after September 30, 2022. Notwithstanding, the District has already taken steps to increase water supply through the upgrade and of the LGVSD facility to increase availability of recycled water and by rehabilitating the Kastania Pump Station to enhance system flow capacity during peak demand.

**R2.** *By December 31, 2022, Marin Municipal Water District should develop and act on a detailed long-term roadmap to resilience by identifying and prioritizing sources of additional supply.*

**This recommendation has been implemented.** Based on earlier planning efforts, on February 1, 2022, the District secured the services of Jacobs Engineering for a Strategic Water Supply Assessment, which will be completed in December 2022 and includes a prioritization of potential additional supplies.

**R3.** *In its resilience roadmap, Marin Municipal Water District should prioritize the development of drought-proof sources of water, including direct potable reuse and regional desalination.*

**This recommendation has been implemented.** The Strategic Water Supply Assessment has identified a number of potential water management alternatives including water reuse options, desalination and ongoing demand management. The water management alternatives will be assessed and evaluated based in large part on how they perform under various drought scenarios.

**R4.** *In its resilience roadmap, Marin Municipal Water District should include strategies for collaborating with other Bay Area water districts to enhance its competitiveness in seeking federal and state grants.*

**This recommendation has been implemented.** The District participates in the North Bay Water Reuse Authority, Sonoma-Marin Partnership, Bay Area Regional Reliability, and a host of other industry groups and coalitions that coordinate and support federal and state grant opportunities.

**R5.** *By December 31, 2022, Marin Municipal Water District should adopt a near-term plan for increasing Russian River imports and expanding the District's relationship with the Sonoma County Water Agency.*

**This recommendation has been implemented.** The Kastania Pump Station was re-engineered to come on line in early 2022 and has enhanced the District's ability to import water from the Russian River. Staff continues to explore options to improve the availability of imported water.

**R6.** *By December 31, 2022, the Marin Municipal Water District should commit to completing a District-wide installation of Advanced Metering Infrastructure by the end of 2024.*

**This recommendation has not yet been implemented, but will be implemented in the future.** A system-wide AMI implementation plan is now under development and possible future funding sources are being evaluated. Notwithstanding, the District has supported and fostered the adoption of Flume devices by District customers, contributing to data collection and real time information on leaks for user customers.

**R7. By December 31, 2022, Marin Municipal Water District should develop a long-term plan for financing the prioritized resilience options and communicate this information to ratepayers.**

**This recommendation has not yet been implemented, but will be implemented in the future.** Beginning in fiscal year 2019, the District revised its rate structure by incorporating its Capital Maintenance Fee, a fixed fee for all District customers, which provides a consistent funding source to help meet the District's capital needs. Further, upon the conclusion of the Strategic Water Supply Assessment, which is expected to be complete in December 2022, the long-term plan for financing the options identified in the assessment will be developed. It is anticipated that financing alternatives would include the pursuit of grant opportunities and bond financing.

Sincerely,

A handwritten signature in blue ink that reads "Bennett Horenstein".

Bennett Horenstein  
District General Manager

cc: Board of Directors, Marin Municipal Water District