



2023 FLOOD-MAR FORUM

Flood-MAR in Action



Photo Credit: CA Department of Water Resources

At the **Flood-MAR Network's fourth biannual Flood-MAR Public Forum** held in November 2023, nearly 100 Flood-MAR practitioners gathered to share success stories and lessons learned from the landmark wet winter of 2022 – 2023 and identify areas for further preparation needed to implement projects that use floodwaters for managed aquifer recharge in future wet years, for the benefit of communities, ecosystems, and agriculture.

After the 2021 Flood-MAR Forum, California experienced historic rainfall that resulted in Executive Orders [N-7-22](#) and [N-4-23](#) that subsequently allowed Flood-MAR efforts to expand in real-time to a scale not yet seen. Growers, water managers, environmental NGOs, and agency staff all shared their experiences practicing Flood-MAR, notably including:

- A wide variety of recharge methods including spreading basins, unlined canals, floodplains, and agricultural fields.
- Recharge incentives, including novel groundwater accounting and crediting methods.
- Multi-benefit projects that combined habitat creation with groundwater recharge.
- New technologies for understanding aquifers and monitoring diversions, as well as innovative field practices.

Out of this sharing of experiences and ideas, Forum discussions culminated in five main takeaways:

1 California is poised to scale up Flood-MAR as a significant strategy for addressing groundwater overdraft, but more work is needed.

Farm-scale and regional pilot projects have provided proof of concept. Forum participants expressed desire to move beyond these pilot projects and to scale up the geographic scope of Flood-MAR. Informing landowners and local districts of the lessons learned from the pilots is key to expanding recharge.

To help scale up Flood-MAR implementation, you can:

- Learn more about Flood-MAR and share your experiences on the [Flood-MAR Hub](#).
- Promote Flood-MAR in your region.
- Join the Flood-MAR Network's Estimating Recharge Action Team, which seeks to identify best approaches for the practical estimation of recharge.

"This last season took Flood-MAR from a theoretical, ethereal, abstract concept to something that can, and has to, happen for water management in California."

– Kamyar Guivetchi, CA Department of Water Resources (DWR)

2 Partnerships and collaboration among growers and water managers have been key to successful Flood-MAR.

Progress has been made and relationships formed through the Network and the pilot projects, but Flood-MAR implementation remains complex. Partnerships and collaboration have been key to overcoming hurdles and improving understanding of water rights, water policy, system operations, infrastructure needs, and potential effects on water supply and water quality for both communities and ecosystems.

Cross-sector discussions and, notably, farmers talking with other farmers, has greatly helped to socialize Flood-MAR and even encourage some landowners to take uncompensated risks to recharge.

The Flood-MAR Network offers a critical space for this essential collaboration in advancing Flood-MAR, and promoting grower buy-in remains a very high priority.

Here's what you can do now to help growers implement Flood-MAR projects:

- Contact growers or water districts near you to learn more about available recharge resources and opportunities in your area.
- Check out the [Flood-MAR Hub](#) for guidance about [on-farm recharge methods](#), [district-scale recharge programs](#), and [protecting water quality](#) – among other resources!
- Learn about what industry groups like the [Almond Board of California](#) and other associations are doing to support recharge.
- Join the Incentives for Recharge Action Team, which expands information sharing regarding existing and previous incentives programs and generates ideas for new incentives or strategies.

“We have an opportunity to pull our best partners together and see what we can accomplish.”

– Karla Nemeth, CA Department of Water Resources



Forum participants on Day 2 of the 2023 Flood-MAR Forum listen to State agency leaders share information on how State agencies are helping to advance Flood-MAR in CA and what more can be done. Photo credit: Marisa Perez-Reyes, Stantec

3 Flood-MAR lends itself to multiple benefits beyond groundwater recharge and flood protection.

By using floodwater for groundwater recharge, Flood-MAR projects are multi-benefit by nature. Rehabilitating floodplains, protecting instream flow needs, and considering potential impacts on groundwater quality are several areas where Flood-MAR projects can achieve multiple benefits.

Flood-MAR is also an important climate change adaptation strategy that uses one climate challenge, increasing severity of flood events, to address another challenge, groundwater overdraft.

Here's what you can do now to consider and include multiple benefits in planning and implementing Flood-MAR projects:

- Use available resources, such as the [California Ecological Flows Framework](#) and The Nature Conservancy's [California Natural Flows Database](#) to help determine water available for recharge.
- Learn about the Department of Water Resources' [Multi-Benefit Floodplain Restoration Studies](#) that are being conducted with local partners.
- Join the Water Quality Monitoring Action Team, which identifies considerations for managing or mitigating contaminants under flood conditions, and compiles data to support agencies in developing best practices, guidance, and models for Flood-MAR.
- Join the Instream Flows Action Team, which considers how to balance water used for recharge and instream ecological needs during Flood-MAR project operations.

4 State support and coordination across agencies helps streamline and activate Flood-MAR.

The State has an important role to play in providing financial and technical assistance to Flood-MAR practitioners, releasing guidance on best practices, coordinating at an interagency level to promote alignment (particularly for data collection and monitoring), and streamlining permitting pathways.

Forum participants underscored the necessity of State leadership and support in the Flood-MAR space, and provided considerations, many of which were echoed by State leaders present, such as the value of an inter-agency

work group on Flood-MAR, the importance of State technical and financial assistance, and acknowledgement of challenges related to the current water rights application process.

Here's what you can do now:

- Access resources available on State Agency websites, such as the [Department of Water Resources](#) and [State Water Resources Control Board](#).
- Join the Assessing Policy Action Team, which seeks to explore ways to further leverage opportunities and/or address barriers to effective State support and coordination.

"For me, [Flood-MAR] is the solution that provides the hope. That proves the solutions are on our land, if we work together, and are willing to take an integrated resource management approach and think about all the multi-benefits."

– Karen Ross, CA Department of Food and Agriculture Secretary

5 Flood-MAR projects are a good investment for California.

The individuals and agencies involved in recharge had to move quickly last winter as the storms persisted. Those that were prepared for the inundation of rainfall were able to achieve impressive results with record breaking diversions for recharge.

Forum participants shared challenges experienced while planning and implementing their Flood-MAR projects, such as personal expense, time investment, and working in the rain at odd hours. But when asked if they would do it again, participants responded with a resounding "Yes!"

"Would I do it again? Yes! Every, single, time. I would do it again and again."

– Christine Gemperle, Gemperle Orchards, when considering if she would invest in the infrastructure and effort required to prepare her fields for flood-MAR.

Further investments in enabling conditions and infrastructure are needed across the state for more individuals and agencies to be prepared for when heavy rains come. There are some state and federal funding opportunities available that prioritize multi-benefit projects and collaborative efforts.



Flood-MAR in action! Aerial view of an almond orchard intentionally flooded to increase groundwater recharge in Stanislaus County, CA during winter 2023. Photo credit: Almond Board of California

Here's what you can do now to learn more about funding opportunities:

- Find up-to-date information on [State grants](#).
- Consider federal grant opportunities, such as from the [Federal Emergency Management Agency](#), [U.S. Fish & Wildlife Service](#), and [U.S. Bureau of Reclamation](#).
- Join the Flood-MAR Network to keep up-to-date on new guidance and resources.

"We must make tough decisions in advance, to be prepared for when the water arrives."

– Graham Fogg, University of California, Davis

Looking to the Future

The Flood-MAR Network and biannual forums have been essential settings for the discussions and learning that is required to increase the state's capacity to practice Flood-MAR and groundwater recharge.

The Flood-MAR Network recently organized Action Teams to explore ways to further leverage opportunities and/or address barriers to implementation. The Action Teams seek guidance from the broader Flood-MAR Network on ways to advance their efforts and invite participation from all those interested.

To learn more, share your knowledge and insights, or to join any of the Action Teams, visit the floodmar.org website.

Additional Resources

- [Flood-MAR Network Story](#) (Jan 2023)
- [Celebrating Five Years of Flood-MAR](#) (Dec 2023)
- [SMGO Tools](#)
- [San Joaquin River Watershed Studies](#)
- [Fastpath App](#)
- And many more [resources at floodmar.org](https://floodmar.org)