SGMA and Recharge: How to Make Lemonade Out of Groundwater Regulation
Session Speakers

Jesse Roseman, ABC
Kamyar Guivetchi, DWR
Joe Choperena, Sustainable Conservation
Matt Efird, Efird Ag Enterprises, Inc. and Double E Farms
Don Cameron, Terranova Ranch
Tony Savant, Savant Holsteins
Flood-MAR
Using Floodwater for Managed Aquifer Recharge

Almond Conference
December 12, 2019
California’s Water Management
A Tale of Extremes

Historic Flood Events
- 1969
- 1970
- 1972
- 1974
- 1976
- 1977
- 1978
- 1980
- 1983
- 1986
- 1993
- 1995
- 1997
- 1998
- 2002
- 2004
- 2006
- 2008
- 2011
- 2016
- 2017

Historic Drought Periods
- 1976-1977
- 1987-1992
- 2007-2009
- 2012-2015

TOO MUCH
Folsom Reservoir, 1976

TOO LITTLE
Sustainability Requires Big Collaboration, Agency Alignment & Sector Co-Management

Integrated Watershed Management

Multi-Sector Collaboration
Multi-Discipline Planning
Multi-Benefit Projects
Multi-Fund Investments
Flood-MAR is the Epitome

An integrated strategy to manage water resources for sustainability & climate resiliency …

… using high flows from (or in anticipation of) rainfall or snowmelt for managed aquifer recharge …

… on agricultural lands, working landscapes, and managed natural lands
Flood-MAR is …

- … **partnerships & voluntary** (public-private partnerships among private landowners, public agencies, and governments)
- … **multi-sector** (co-management of flood, surface & groundwater, ecosystem & quality)
- … **scalable** (on-farm, GSA, basin, region, watershed)
- … **multi-faceted** (reoperation, conveyance, storage, recharge, banking, transfers, cultivation, restoration, etc.)
- … **untapped** part of California’s water portfolio
A Headwaters to Groundwater Strategy

Example Components of Flood-MAR Projects
State Recommends Flood-MAR

- State Board of Food & Agriculture letter (May 2018)
- Final CA Water Plan Update 2018 (July 2019)
DWR Flood-MAR Activities

- Outreach & Technical Assistance
- Fact Sheet & White Paper
- Merced River Basin Flood-MAR Reconnaissance Study
- Tuolumne River Climate Vulnerability Study & Adaptive Planning
- Draft Research & Data Development Framework
- Research Advisory Committee
- Research & Data Development Plan
- Flood-MAR Project Grants (Prop 50 & 68)
- Convening Flood-MAR Network & seeking partnerships for studies & pilots
Research Advisory Committee

Al Costa, Grower
Almond Board
American Rivers
Audubon California
Bachand & Associates
Bryan-Morris Ranch
California Chapter American Planning Association
California Department of Conservation
California Department of Fish and Wildlife
California Department of Food and Agriculture
California Department of Pesticide Regulation
California Department of Water Resources
California Geologic Survey
California Governor’s Office of Planning and Research
California Rice Commission
California State University, Chico
California State University, East Bay
California State University, Fresno
California State University, Sacramento
California Trout
Caltech Jet Propulsion Laboratory
cbce eco engineering
Central Coast Regional Water Quality Control Board
Central Valley Flood Protection Board
City of Benicia
Civil Engineering Solutions
Clean Water Action
Colorado River Board
Community Water Center
Cornell University
Ducks Unlimited
Earth Genome
East Bay Municipal Utility District
Environmental Defense Fund
ESAB
Flow West
GeoSystems Analysis
Grasslands Water District
Grower-Shipper Association of Central California
HDR
Intera Consulting
Kathy Wood-Mclaughlin, Consultant
Kautz Farms
Kern Water Bank Authority
Kings County California
Kings River Conservation District
Lawrence Berkeley National Laboratory
Lawrence Livermore National Laboratory
Local Government Commission
Loyola Marymount University
Luhdorf & Scalmanini
MBK Engineers
Merced Irrigation District
Montgomery & Associates
National Aeronautics and Space Administration
National Audubon Society
National Oceanic and Atmospheric Administration
North Coast Regional Water Quality Control Board
Northern California Water Association
Orange County Water District
PLANWELL Consulting
Point Blue Conservation Science
R. M. Gailey Consulting Hydrogeologist PC
Resource Conservation District of Central California
Resource Conservation District of Monterey County
Resource Conservation District of Santa Cruz County
River Partners
RMA
San Mateo County Resource Conservation District
Sohagi Law Group
South Yuba River Citizens League
Southern AgCoalitions
Stanford University
Stanford Water in the West
Stantec
State Water Resources Control Board
Stillwater Science
Stockholm Environment Institute
Sustainable Conservation
Terranova Ranch
The Nature Conservancy
Trout Unlimited
Turlock Irrigation District
University of California, Berkeley
University of California Cooperative Extension, Monterey County
University of California, Davis
University of California Division of Agriculture and Natural Resources
University of California, Irvine
University of California, Merced
University of California, Santa Cruz
U.S. Army Corps of Engineers
U.S. Bureau of Reclamation
U.S. Geological Survey
U.S. Fish and Wildlife Service
Water Education for Latino Leaders
Western Regional Climate Center
Woodard and Curran
Yolo County Flood Control & Water Conservation District
### 13 Subcommittee Themes

1. Hydrology Observation and Prediction
2. Reservoir Operation
3. Infrastructure Conveyance and Hydraulics
4. Crop Suitability
5. Soils, Geology and Aquifer Characterization
6. Land Use Management
7. Water Quality
8. Recharge and Extraction Methods & Measures
9. Environment – Terrestrial/Riparian/Aquatic
10. People and Water
11. Economic Analysis
12. Local, State, Federal Policies and other Legal Constraints
13. Tool and Application Development

### 130 Gaps

### 39 Priority Actions

### 8 implementation factors

- Site Suitability
- Source Water
- Groundwater Use
- Recharge Method and Site Management
- Feasibility Analysis and Adaptive Management
- Governance and Coordination
- Funding and Incentives
- Conveyance

### Flood-MAR Research & Data Development Plan

**Needed Data, Info, Tools & Guidance**

1. Hydrology Observation and Prediction
2. Reservoir Operation
3. Infrastructure Conveyance and Hydraulics
4. Crop Suitability
5. Soils, Geology and Aquifer Characterization
6. Land Use Management
7. Water Quality
8. Recharge and Extraction Methods & Measures
9. Environment – Terrestrial/Riparian/Aquatic
10. People and Water
11. Economic Analysis
12. Local, State, Federal Policies and other Legal Constraints
13. Tool and Application Development
How State Can Expand & Fast-track Flood-MAR Projects

- Recognize California’s aquifers as natural infrastructure and their replenishment as a public benefit

- Make multi-benefit actions for replenishing over-drafted / degraded aquifers — like groundwater recharge — eligible for State grants, technical assistance, and/or regulatory alignment

- Provide information and incentives to public and private landowners to continue and expand groundwater recharge on current and repurposed land uses

- Support regions with self-established expenditure plans and funding mechanisms for multi-benefit water resiliency projects and programs
What Can (Will) I Do?

- **Landowners** – Seek project opportunities and expand partnerships

- **Academia and Private Researchers** – Fill data gaps and conduct pilot projects

- **NGOs and Other Stakeholders** – Encourage project partnerships w/ broad public benefits

- **Gov’t Agencies** – Provide facilitation, technical, and financial assistance

- **Regulators** -- Streamline permitting & provide compliance assistance

- **Policy- and Decision-Makers** – Authorize & fund agencies to remove barriers, conduct studies, support project implementation, and join public-private partnerships

- **ALL** – Help build & participate in a *Flood-MAR Network*
We are Launching a Moonshot!

Kamyar Guivetchi, Manager DWR
Division of Planning

FloodMAR@water.ca.gov

www.water.ca.gov/Programs/All-Programs/Flood-MAR
On-Farm Recharge: Examples, Incentives, and How Growers Can Get Involved

Joe Choperena, Project Director
Central Valley Groundwater Recharge
Sustainable Conservation
Outline

1. Examples
2. Infrastructure
3. Recharge incentives
4. Growers’ roles
On-Farm Recharge

Aggressive Applications
On-Farm Recharge

Conservative Applications
Nitrate Leaching & Water Quality

1. Sound NMP.

2. Avoid recharge on cropland with liquid manure applications.

3. Recharge same fields to reduce legacy N leaching.

4. Avoid recharge near domestic wells meeting drinking water standards.
Water Application Flexibility
On-Farm Recharge
Temporary Infrastructure
On-Farm Recharge
Temporary Infrastructure
Water District Recharge Incentives

- Financial incentives
  - Payments
  - Discounted water
- Pumping credits
- Lease options with both
Alternative On-Farm Recharge Examples

*Dedicated Basins*

- Existing and newly constructed basins
- Multipurpose:
  - Surface runoff
  - Sediment control
  - Recharge
Alternative On-Farm Recharge Examples

Subterranean Recharge

- Reverse tile drain
  - 3 known ag producers in Kern County
Growers’ Roles In Creating Incentives

- Communicate with your GSAs, water districts, and agencies
- Want to be part of the solution
- Develop OFR policies and incentives
Matt Efird,
Efird Ag Enterprises, Inc.
and Double E Farms
SW Application thru micro irrigation

Efird Ag Enterprises, Inc.
Flood Mar- On Farm
Groundwater Recharge

Don J Cameron
VP Terranova Ranch Inc.
dcameron@terranovaranchinc.com
Almond and Pistachio
Phase 1 Off-Farm and On-Farm Conveyance and Capture Conservation Practices

- **On-Farm (Minor) Conveyance**
- **On-Farm Recharge Practices**
- **Off - Farm (Major) Conveyance**

Pump station
Crossing Existing Canal
Spring 2019 First Water
SGMA & Recharge: How to Make Lemonade out of Groundwater Regulations

Tony Savant | Almond Farmer | Madera, CA

Almond Conference
December 12, 2019
From Flooding to Recharge
From Flooding to Recharge
From Flooding to Recharge
From Flooding to Recharge
From Flooding to Recharge
From Flooding to Recharge
Questions?

Tony Savant | Almond Farmer | Madera, CA
Savant Holsteins
tonysavant@Hotmail.com
SGMA and Recharge: How to Make Lemonade Out of Groundwater Regulation