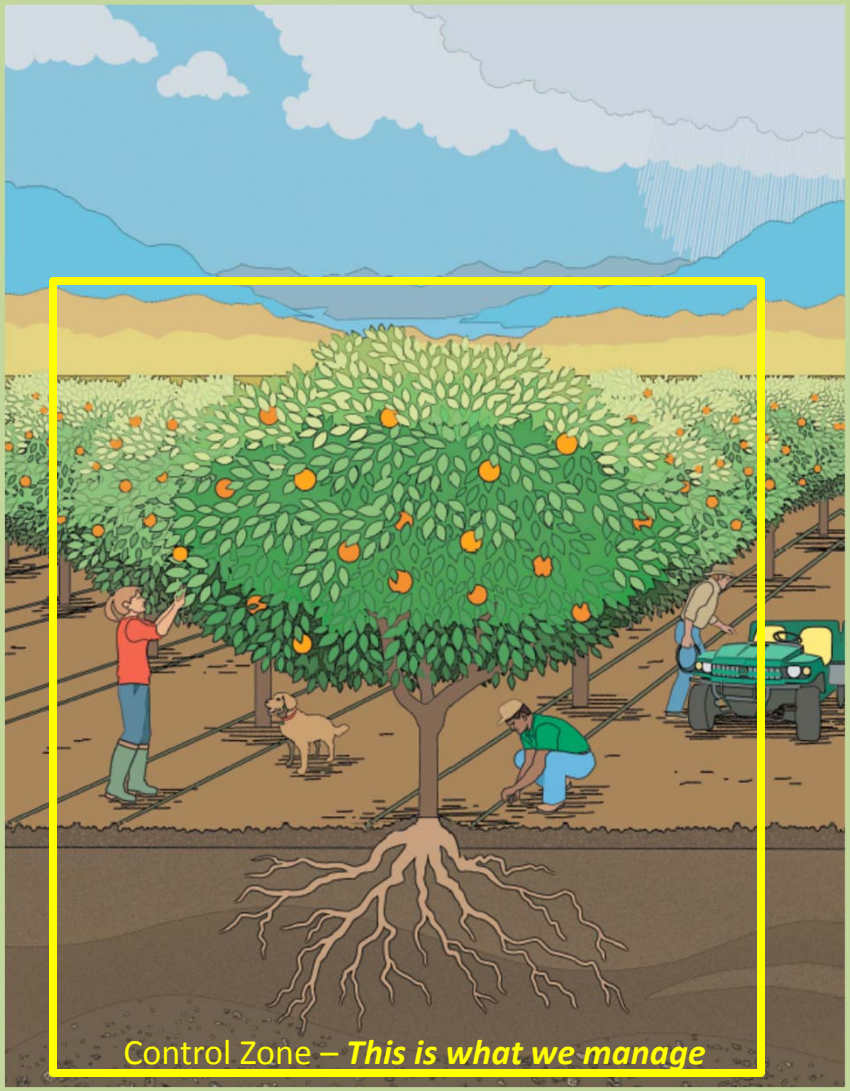

Southern San Joaquin Valley Management Practices Evaluation Program

CA N Assessment Workshop

February 24, 2017

United States Department of Agriculture

Natural Resources Conservation Service

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Questions to Discuss

- How did we get here?
- What is the status quo?
- The advent of regulation
- Things to avoid
- MPEP
  - Goals
  - Workplan
  - Initial Activities
  - Resources & Opportunities for Involvement
  - Relationship to other Irrigated Lands activities
- Questions, Feedback, Suggestions

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We got here by…

- Developing
  - **productive and profitable** farms
  - extensive **irrigation and drainage** infrastructure
  - efficient **on-farm** systems
- **Research and innovation**, leading to previously unimaginable yields (and quality) for a number of high-value crops
- Establishing **global markets** within which California products are recognized and purchased for their quality
- Along with most of the rest of world agriculture
  - use **fertilizer** (including N, which as nitrate moves freely with water in and through soils)
  - other **inputs** to support this level of productivity

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Status Quo

- Leakage of nitrogen into water and the atmosphere **may already be diminishing** due to advances in technology & management
- Studying the problem:
  - **Large-scale, general assessments** to understand overall trends and relationships have pointed to livestock waste & other irrigated agriculture as one principal source of nitrate in groundwater
  - **Small-plot experiments** have been done to understand how management relates to results
  - The effects of many **individual, distinctive fields** has not been evaluated
- Many assume that ***all irrigated lands pollute groundwater***, although this is ***probably false***

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Advent of Regulation

- As a result of California law and nitrate pollution of groundwater in some locales, regulations now require irrigators to:
  - **Monitor & report** N applied, N applied/Yield, and management practices
  - **Evaluate effectiveness** of management practices
  - **Form organizations that share information** about known, protective practices
  - **Implement protective practices** where water quality is being impaired
  - **Assess effect of irrigated agriculture on water quality**, and demonstrate progress in water quality protection
  - 7 grower coalitions formed the SSJV MPEP Committee, and selected a strategy that they believe will provide the best outcome

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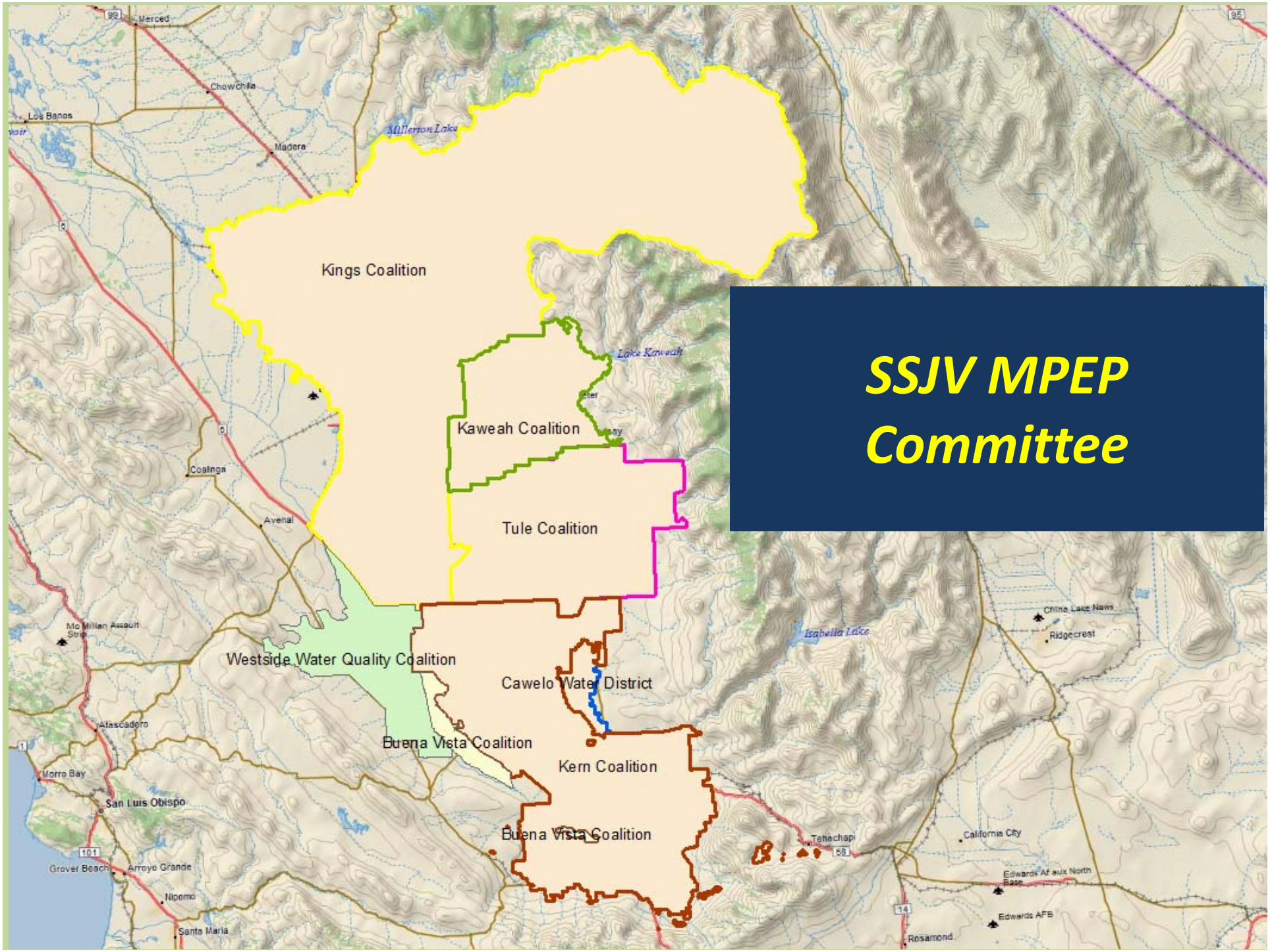

SSJV MPEP Committee

CA N Assessment

- Overview of N situation; conclusion not so different from Harter Report
  - Agriculture a major source of nitrate loading to groundwater
  - Even with best technology:
    - ***Retention of all applied N*** in root zone & crops is very tough
    - Even if we stopped nitrate losses today, ***groundwater effects would persist***
    - Nevertheless, ***practices to minimize N leaching*** can and should be implemented
- The Irrigated Lands Program is pretty much set up to respond to the CA N Assessment findings
  - Scenario 2 from Chapter 6 (Regulatory Lemonade) is where we are headed
    - Vibrant, innovative ***agricultural industry***
    - Firm but reasonable ***regulatory environment***
    - Steady improvement in ***environmental performance***
  - The MPEP is the ***main, grower-led vehicle*** to achieve this outcome in the CV

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Things to Avoid

- Blanket solutions that ignore ***variability in crops, soils, and operations***
- Investing in ***costly, extensive soil and shallow groundwater monitoring*** that does not result in better management decisions
- Time-consuming and costly ***field studies***, unless they provide new & needed information
- Working at cross purposes with our ***knowledge institutions*** (UCCE, CDFA, CSU, NRCS)
- Needlessly frustrating ***regulators and stakeholders*** so that they find reason to make farming even more challenging
- Ignoring ***other compounds*** that could pose similar problems down the road.

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MPE Program Goals

- Meet the objectives of the General Order in a sound, ***scientific***, and ***efficient*** manner by focusing program resources on ***outstanding questions*** and/or ***known problems***, ***minimizing interference*** with agricultural business and production, and avoiding new and/or expanded ***regulatory requirements***.

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Key Actions (from Workplan)

- Focus resources on ***high-impact actions***
- Engage with CV ***Water Board staff*** to build understanding of and support for Program
- Coordinate with other coalitions & dairy to ***avoid redundant work***
- Identify and secure public ***funding*** to achieve these goals
- ***Recognize uncertainty*** and take it into account when interpreting results

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Recognize key challenges and opportunities (from Workplan)

- It is inherently difficult to characterize diverse and numerous blocks as they are ***actually managed by growers***
- However, NRCS, ARS, UCCE, CDFA, CSU, and commodity groups are ***powerful partners***
- State of the art, ***landscape-scale, fate & transport models*** from NRCS & EPA allow simultaneous consideration of the effects of diverse climate, soil, crop, and management

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Quantify nitrate loads and improved performance on irrigated lands (from Workplan)

- Interpret at ***landscape*** (not field) level
- Document and maintain protective practices ***where they already exist***
- Implement mitigating management practices ***where needed as soon as practicable.***
- Use ***real field data*** wherever possible to demonstrate actual field performance

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Initial Activities

Identify and Refine	Outreach and Implement	Assess and Verify
Inventory protective practices; Prioritize crops and practices	Early outreach (2016/17) about known protective practices *(Coalitions, commodity groups, CDFA/FREP)*	First SWAT (N fate) model run for region
Confirm utility of root-zone measurements for groundwater protection for the Central Valley Water Board *(David Smart, Thomas Harter)*	Online calendar of outreach events *(Coalitions, CDFA/FREP, UCCE)*	Creation of safe space to evaluate production-level information
Develop conversions of crop yield to N removed, irrigation water N content, and other N-management online calculators *(Daniel Geisseler)*	Assess barriers to adoption of protective practices *(Mark Lubell, Patrick Brown)*	Refine SWAT runs
Calibrate SWAT against existing N fate and transport results, crop yield, and water balance data	Online N-management resources for growers and advisors *(Coalitions)*	

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Resources & Opportunities for Involvement

- Resources
  - **http://agmpep.com/**
- Get involved through:
  - Direct feedback to the MPEP Team
  - Working with your coalitions
  - Sharing of knowledge and information
    - Grower networks
    - Commodity groups
    - Regional Water Board

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