

## The Southern San Joaquin Valley (Tulare Lake Basin) Management Practices Evaluation Program

The Management Practices Evaluation Program, or MPEP, was devised to complement other components of the Region 5 Irrigated Lands General Orders. This facet of the Orders, along with Coalitions' Groundwater Quality Management Plans, contains most of the actions to actually protect water quality, along with the most rigorous performance demonstrations. This is where we go beyond simple metrics that might indicate a problem, and go through the steps required to solve problems.

Seven coalitions, representing about 1.85 million acres of irrigated land south of Fresno, are implementing a joint MPEP workplan. This workplan has been extensively discussed with State and Regional Board staffs and with technical partners at USDA NRCS, CDFA, UC, and CSU. We have also reached out to other irrigated lands coalitions and the dairy industry to exchange ideas and promote consistent approaches. The coalitions were recently awarded \$2M through the USDA NRCS Conservation Innovation Grant program. This grant award, combined with match contributions exceeding \$2M, provides part of the funding necessary for successful implementation of the workplan.

Several MPEP activities combine to deliver what is needed. With the help of management practice literature and expertise (growers, farm and Certified Crop Advisers, researchers), we will compile known protective practices, relate them to circumstances where they can and should be applied, and reach out to our membership to raise levels of awareness, understanding, and implementation. This is the most practical way to rapidly reduce the mass of nitrate leaching from agricultural root zones.

At the same time, we will prioritize groups of crop, soil, and groundwater conditions, focusing on situations with the greatest potential to improve groundwater quality protection. We will identify weaknesses in our existing knowledge and barriers to adoption, and then develop, test, and verify new or revised, protective practices that feed into the next generation of outreach.

Outreach is how we facilitate and speed practice implementation by coalition members. Depending on the nature of the question, studies take the form of classic monitored field plots, monitoring of grower operations along with crop and soil conditions, surveys of grower operational preferences and barriers to adoption, or detailed assessment of existing knowledge on a particular issue (e.g., a literature review).

Our coalition members farm in diverse environmental and management settings, ranging from growers serving a locavore market on limited acreage with multiple vegetable crops per year, to extensive plantings of drip irrigated vines and fruit and nut trees. Although we are required to assess performance across the entirety of this area, we could not conceive of a soil and groundwater sampling program that, by itself, would produce such an assessment.

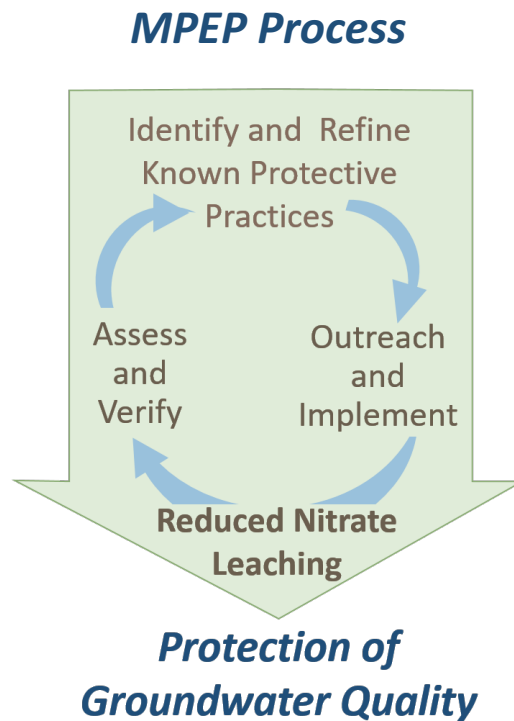
Fortunately, USDA and EPA have invested years and millions of dollars in modeling tools that, when properly calibrated, can be used to efficiently assess the environmental effects of farming, and the influence of projected changes in management. In this way, crop, soil, climate, and management information can be efficiently integrated to understand what is happening at the field and landscape

scales, as required by the orders. We have developed initial model runs that will be refined over time to help the coalitions meet their performance assessment obligations and guide management.

Three other facets of the Orders provide management information:

- Farm Evaluations identify practices in use by growers
- Nitrogen Summary Reports relate nitrogen applied by growers (and removed by crops) to other management, crop, and soil information in our diverse landscapes
- The Groundwater Quality Management Plans prescribe what actions are needed to diminish loss of specific constituents (like nitrate) from crop root zones; these actions are mostly drawn from the MPEP.

Together with monitoring data from focused field surveys, calibrated modeling results, and long-term groundwater quality trend monitoring, these provide the feedback necessary to initiate, assess, and verify progress in protecting groundwater quality.



*This simplified schematic illustrates the main components of the Management Practices Evaluation Program.*