

**AGRICULTURAL WATER
QUALITY ISSUES FOR DELTA
SOURCE WATER**

**SYNOPSIS OF THE
SAN JOAQUIN VALLEY
DRAINAGE PROGRAM**

SAN JOAQUIN VALLEY DRAINAGE PROGRAM

Executive Summary

The State-Federal San Joaquin Valley Drainage Program culminated approximately six years of study in September 1990 with a report entitled "A Management Plan for Agricultural Subsurface Drainage and Related Problems on the Westside San Joaquin Valley". This report focused on in-valley management of the agricultural drainage and drainage-related problems on the west side of the San Joaquin Valley.

The State and federal agencies¹ involved in developing the plan recognized that "unattended plans often do not materialize" and prepared a strategy for implementation of the management plan which was presented in a memorandum report entitled "A Strategy for Implementation of the Management Plan for Agricultural Subsurface Drainage and Related Problems on the Westside San Joaquin Valley".

The strategy identified the critical actions required to implement the recommendations of the report and proposed a plan, an organizational structure, a schedule, and a budget to

¹ The program participants and the signatories to the MOU include: 1) U.S. Bureau of Reclamation, 2) U.S. Fish and Wildlife Service, 3) U.S. Soil Conservation Service, 4) U.S. Geological Service, 5) California Department Water Resources, 6) California Department of Fish and Game, 7) California Department of Food and Agriculture, and 8) State Water Resources Control Board.

accomplish these actions. A Memorandum of Understanding (MOU) was executed between the eight agencies¹ which adopted the strategy. A copy of this MOU is attached to this paper.

To date, while the management team continues to meet on a regular basis, a lack of financial and personnel resources has hampered the implementation strategy. The single exception to this is the land retirement program for which DWR has budgeted its portion of the initial years' funding Fiscal Year 1993-94.

SAN JOAQUIN VALLEY DRAINAGE PROGRAM

Introduction

The body of this paper will discuss the background of the program, the participants and structure of the program, the findings and recommendations of the study, and describe the strategy for implementation of the recommendations.

Background Of The Problem

The chief area of concern for the Drainage Program was the west side of California's San Joaquin Valley from the Sacramento-San Joaquin Delta on the north to the Tehachapi Mountains south of Bakersfield. This area coincides generally with the irrigation service areas of the Federal Delta-Mendota Canal, the Federal San Luis Unit and the State Water Project. The area is predominantly rural.

The San Joaquin Valley is a gently sloping, nearly unbroken alluvial plain, about 250 miles long and an average of 45 miles wide, that is characterized by a mild, dry climate. Nearly all crops grown commercially in the region require irrigation.

Soils on the western side of the valley are derived from the marine sediments that make up the Coast Range and are generally

high in salts and, in some areas, trace elements such as selenium that occur in a marine environment. Irrigation of these soils have dissolved these substances and accelerated their movement into the shallow ground water. Where water tables are high and agricultural drains are necessary, drainage water frequently contains elevated concentrations of salts and trace elements. Under high water-table conditions, these substances are alternately dissolved by irrigation water and then reprecipitated as evapotranspiration removes water from the water table, leaving behind increasing concentrations of salts in the soil and in shallow ground water.

In addition to 2.5 million acres of irrigated agricultural land, the area also contains remnant natural and managed habitats of importance to a diversity of fish and wildlife species. Natural and managed habitats impacted by agricultural drainage include the Grasslands area, a large grasslands/wetlands complex in the southern San Joaquin Basin where for several decades commingled surface and subsurface agricultural drainage water was used for habitat management, and the San Joaquin River, into which an estimated 35,000 to 56,000 acre-feet per year of collected subsurface agricultural drainage water is currently discharged. Man-made drainage-created habitats include: evaporation ponds (primarily in the Tulare Basin), where subsurface drainage water is discharged and concentrated and which are used extensively by aquatic birds; and agroforestry

plantations that are watered with subsurface drainage water and are used by numerous avian and terrestrial wildlife species.

Earlier studies of the drainage problem and efforts to solve that problem had resulted in the construction of approximately 85 miles of a planned 209-mile drainage canal that was to discharge into the Sacramento-San Joaquin Delta. A part of the constructed section discharged into Kesterson Reservoir that was then planned as a storage control and wildlife refuge area.

In 1983, discovery of deformities and deaths of aquatic birds at Kesterson Reservoir altered the perception of drainage problems on the west side of the valley. Selenium poisoning was determined to be the probable culprit. The drainage problem then became a more serious environmental concern as well as an agricultural problem on the west side of the valley.

Program Purpose

The San Joaquin Valley Drainage Program (SJVDP) was established in 1984 by the U. S. Secretary of the Interior and the Governor of California as a joint federal and State effort to investigate drainage and drainage-related problems and to identify possible solutions. The SJVDP adopted the following objectives:

Public Health

Minimize potential risks that may be associated with agricultural drainage water.

Water Quality

Protect existing and future reasonable and beneficial uses of surface and ground waters.

Agricultural Lands and Productivity

Sustain productivity of existing farmlands on the west side of the valley.

Fish and Wildlife Resources

Protect and enhance fish and wildlife resources.

The San Joaquin Valley Drainage Program was directed to investigate the problems and "to formulate, evaluate, and recommend alternatives for the immediate and long-range management of the problems". The program was also subsequently directed to focus on "in-valley" management of the problems, and therefore, although continued discharge to the San Joaquin river was studied, a drain to the Delta was not included in the evaluation of alternatives. However, the proposed plan includes plan components that are necessary first steps regardless of the ultimate choice of a sink for the drainage water and dissolved constituents now accumulating in parts of the San Joaquin Valley.

Program Participants

Three Federal agencies (U. S. Bureau of Reclamation, Fish and Wildlife Service, and Geological Survey) were named by the Secretary of the Interior, and two State agencies named by the Governor (Department of Fish and Game and Department of Water Resources), were the principal program participants. A Policy and Management Committee comprised of Director and Regional Director level representatives from each of those agencies was formed to provide policy direction to the program. Representatives from U.S. Soil Conservation Service and from the State of California Department of Food and Agriculture and State Water Resources Control Board also sit on the Management Committee.

An interagency study team made up of interdisciplinary representatives of the various agencies together with contract consultants conducted the analytical, planning, and management activities.

Three main committees provided advice to the Policy and Management Committee and the study team. The National Research Council Committee on Irrigation-Induced Water Quality Problems provided scientific oversight. A 14-member Citizens Advisory Committee representing a broad spectrum of organizations and individuals interested in and affected by drainage-related problems provided information, viewpoints, and guidance. An

Interagency Technical Advisory Committee and several subcommittees composed of personnel from several federal and State agencies and both California university systems provided technical review and guidance.

Altogether, over one hundred people were involved in the study directly and several hundred more through two series of public meetings held to solicit comments on the preliminary and final program reports.

The Final Program Report

The final program report, "A Management Plan for Agricultural Subsurface Drainage and Related Problems on the West side San Joaquin Valley" was published in September 1990. The report outlines the problem, describes what the study revealed or confirmed, presents in-valley management options and planning alternatives, and recommends a plan for in-valley management of drainage and drainage-related problems.

The plan contains eight major components:

- Source control
- Drainage reuse
- Evaporation systems
- Land retirement
- Discharge to the San Joaquin River
- Protection, restoration, and provision of substitute water

- Ground-water management supplies for fish and wildlife habitat
- Institutional changes

Need For Implementation Strategy

The plan in the final SJVDP report outlines a set of invalley actions (often regional in scope) that, taken together, will enable management of the agricultural drainage problem for several decades into the future. In the plan report, however, there was no formal agreement on specific actions, responsibilities, implementation schedules, and budgeting or funding. However, the participants in the San Joaquin Valley Drainage Program recognized the need for a strategy to promote action on the program's recommended plan and set a time period for its accomplishment. They agreed the strategy should define: (1) required actions and priorities, (2) agency responsibilities, and (3) funding sources and amounts. They also agreed that the "Strategy for Implementation" should be presented in a report which should include a memorandum of understanding among participating federal and State agencies.

In addition, it was determined that the strategy would

include: (1) A long-term monitoring program for tracking drainage conditions and the impacts of actions to manage drainage problems; and (2) Development and execution of a plan for long-term management of the SJVDP data base (which includes reports, files, computer models, computer data storage, a geographic information system, and numerous other items).

Implementation Strategy

The implementation strategy developed for the program was presented in the previously quoted memorandum report. The following purposes were advanced by this strategy:

- (1) establishing a continuing coordination structure;
- (2) scheduling and prioritizing implementation needs;
- (3) identifying federal, State, local, and private roles in implementation;
- (4) recommending implementation actions; and
- (5) seeking agreement of involved parties.

Of these purposes, perhaps the most important is the structure to ensure continuing coordination of efforts.

There has always been some continuing coordination between Federal, State, local, and other drainage interests, however, structured coordination has historically taken place only during formally organized, agency-endorsed study programs.

Consequently, in an effort to maintain the momentum of the program, the management team from the 8 agencies participating in the study meet regularly. However, lack of funding and the resulting lack of staff hamper effective progress of the program in implementing the actions identified in the strategy. The one exception is the land retirement plan for which DWR has budgeted funds for the initial phase in Fiscal Year 1993-94.

The goal of the management team is to secure the necessary funding from each agency so as to keep the implementation strategy on track.