

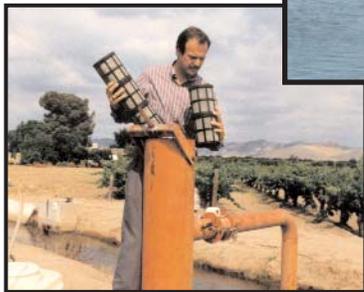
Groundwater Management in the Kings River Region

a comprehensive and coordinated effort



March 2004

The coordinated use of surface and groundwater supplies, known as conjunctive use and practiced for decades in the area, is a key strategy for groundwater management in the Kings River region.



Direct recharge, where surface water is intentionally percolated into the aquifer for later use, and in lieu recharge, where groundwater wells are shut off and local and imported surface water is utilized, are tools used by Kings River water agencies to manage water supplies.

Since the early recharge basins in the 1930s, groundwater management has been regularly practiced in the Kings River service area. From those early beginnings, the effort has expanded to numerous programs in water storage, recharge and quality through the coordinated effort of the thirty-seven agencies that have a role in the Kings River's groundwater resources.

The goal of this comprehensive effort is to provide a balanced and high quality groundwater supply to the over 850,000 residents and water users within the 1.2 million acre Kings River region. This is accomplished by the Kings River water agencies working individually and together with local city and county governments on programs that address groundwater supply and quality with an emphasis on regional coordination.

Groundwater Supply

Groundwater resources for the Kings River region are supplied by the area's aquifer. The region's groundwater supply meets the demands of domestic and agricultural uses resulting in significant groundwater extractions in certain areas and during drought periods.

These extractions are replenished by in lieu and direct recharge programs. As a conjunctive use basin, in lieu recharge is the most broadly used method in the region.

One of the oldest direct recharge programs is **Consolidated Irrigation District's (CID) recharge program** in the Selma and Kingsburg areas. A San Joaquin Valley pioneer in groundwater management, CID began its recharge program by acquiring its first percolation basin in 1932. An initial plan of sixteen ponds eventually grew to forty-six basins covering 1,300 acres

located in the sandy soils of the Kings River's alluvial plain.

In nearby Kings County, the **Kings County Water District** is working on a project to bank off-peak sources of water to help mitigate the imbalanced water supply in certain areas of Kings County. The banked water from the **Apex Conjunctive Use Project** would be used in the summer when it is most needed.

In addition to **Fresno Irrigation District's** numerous recharge basins, the Waldron Pond is the first groundwater banking facility to be constructed within the District. Lands currently committed to the project just west of Fresno will provide percolation over roughly 220 acres with an average annual recovery estimated to be 10,000 acre-feet per year putting to beneficial use storm and flood waters.

Within the Kings River region, there are over 3,800 acres of recharge ponds with the capacity of recharging 87,000 acre feet of water annually, along with several thousands of miles of unlined canals that have direct recharge benefits.

Groundwater Quality

Since nearly all of the domestic, municipal, industrial, and portions of agricultural water for the Kings River service area are obtained by pumping groundwater, maintenance of a quality groundwater supply is essential. Local agencies continue to work on the best ways to manage and protect this resource including long-term water quality monitoring and improvement projects.

One of these projects is in an 126,000 acre area southwest of Fresno designated

as **Groundwater Management Area A**. The monitoring program, part of the Kings River Conservation District's implementation of Area A's groundwater management plan, has been on-going since 1995 and includes field measurements of electrical conductivity, pH and temperature taken at predetermined pumping wells. Groundwater levels are also monitored. The program will allow for a consistent baseline for groundwater quality monitoring.

Regional Coordination

In the Kings River region, local governmental and water agencies are working together to develop comprehensive groundwater management strategies designed to take better advantage of the natural relationship between surface and groundwater. Coordinated management efforts of local and imported surface supplies along with groundwater are ongoing within the Kings River region and adjoining areas.

The Cities of Fresno and Clovis, the Fresno Metropolitan Flood Control District and the Fresno Irrigation District are involved in the cooperative implementation of a comprehensive surface and groundwater management effort. The main thrust of the long-standing **Fresno/Clovis Area Recharge Program** involves the use of flood control basins for recharge during the summer when they are not needed to control urban storm runoff. The program recharges an average of 60,000 acre-feet of surface water per year. The regional groundwater table also benefits from the intentional use of Fresno Irrigation District's unlined canals for an additional recharge of up to 80,000 acre-feet per year.

The **McMullin Recharge Group** was formed in 1999 to address the long-term water supply imbalance in the Raisin City area caused by the lack of surface water available for irrigation. Studies are being conducted to locate the best sites for recharge basins in the 148,000-acre project area. Members of the group include James Irrigation District, Mid-Valley Water District, Raisin City Water District, Tranquillity Irrigation District, Kings

River Conservation District (KRCD), and Teranova Ranch, Inc.

Water agencies from western Fresno and Kings counties have formed the **North Fork Conjunctive Water Management Group** to explore potential projects and conduct studies that can provide benefits for the valley's water supply. Members include Murphy Slough Association, Crescent Canal Company, Stinson Canal and Irrigation Company, KRCD, Burrel Ditch Company, Liberty Canal Company and California Department of Water Resources (DWR).

The DWR, KRCD, Alta, Consolidated and Fresno irrigation districts are participants in a **Integrated Storage Investigations Project** to study varying water management options to help plan for the future water needs of California. Efforts specifically focus on development of facilities to capture and recharge floodwater from the Kings River.

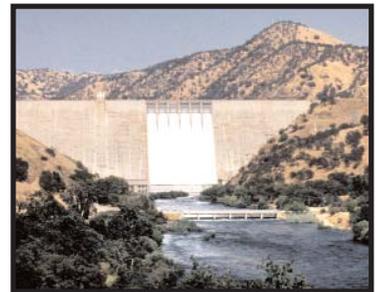
The **Tulare Lake Bed Coordinated Groundwater Management Plan** was developed and adopted in May 1995. The Plan encompasses over 250,000 acres and includes about 246,000 acres of productive agricultural farmland and approximately 4,500 acres of municipal and industrial land. Currently, Plan participants include seven public water districts, the City of Corcoran, and several private landowners. The Plan documents the local groundwater management practices, encourages the importation of surface water from the State Water Project, promotes efficient water practices and conservation programs and acts to preserve local groundwater management.

Environmental Benefits

Coordinating water supplies in the region through conjunctive use practices has environmental benefits such as reducing energy usage and enhancing water quality. As the groundwater table's downward trend is reversed, usage of energy for pumping is reduced. The region's air quality also benefits from reduced usage of diesel pumps.

A further example of the commitment to the environment can be seen in the **Kings River Fisheries Management Program**, a project to enhance the fisheries in the Kings River. Participants in the program include the 28 member agencies of the Kings River Water Association, the California Department of Fish & Game, and the Kings River Conservation District.

Recognizing that the geography in the region is complex, groundwater strategies are focused on projects that address the unique hydrological conditions for specific areas. Most direct recharge projects are in the northern part of the region where the soils are best suited for percolation, while in lieu projects are predominantly in the southern part.



Agencies involved in Kings River ground-water management efforts include:

Alta Irrigation District
Burrel Ditch Company
Clark's Fork Reclamation District #2069
Consolidated Irrigation District
Corcoran Irrigation Company
Corcoran Irrigation District
Crescent Canal Company
Empire West Side Irrigation District
Fresno Irrigation District
John Heinlen Mutual Water Company
James Irrigation District
Kings County Water District
Kings River Conservation District
Kings River Water Association
Kings River Water District
Lakeside Irrigation Water District
Laguna Irrigation District
Last Chance Water Ditch Company
Lemoore Canal & Irrigation Company
Liberty Canal Company
Liberty Mill Race Company
Liberty Water District
Lovelace Water Corporation
Mid-Valley Water District
Murphy Slough Association
Peoples Ditch Company
Raisin City Water District
Reed Ditch Company
Riverdale Irrigation District
Southeast Lake Water Company
Stinson Canal & Irrigation Company
Stratford Irrigation District
Tranquillity Irrigation District
Tulare Lake Basin Water Storage District
Tulare Lake Canal Company
Tulare Lake Reclamation District #761
Upper San Jose Water Company

For more information on programs discussed in this brochure, please contact the following agencies:

Consolidated Irrigation District Recharge Program

Consolidated Irrigation District, 559-896-1661

Apex Conjunctive Use Project

Kings County Water District, 559-584-6412

Waldron Pond

Fresno Irrigation District, 559-237-7161

Area A Groundwater Monitoring

Kings River Conservation District, 559-237-5567

Mid-Valley Water District, 559-449-2700

Raisin City Water District, 559-498-8323

Fresno/Clovis Area Recharge Program

Fresno Irrigation District, 559-233-7161, Gary Serrato

City of Fresno, 559-261-8610, Martin McIntyre

City of Clovis, 559-324-2613, Alan Weaver

Fresno Metropolitan Flood Control District, 559-456-3292, Jerry Lakeman

McMullin Recharge Group

James Irrigation District, 559-693-4356

Kings River Conservation District, 559-237-5567

Mid-Valley Water District, 559-449-2700

Raisin City Water District, 559-498-8323

Tranquillity Irrigation District, 559-698-7225

North Fork Conjunctive Water Management Group

Burrel Ditch Company, 559-867-4457

California Department of Water Resources, (916) 651-9232, Eric Hong

Crescent Canal Company, 559-866-5671

Kings River Conservation District, 559-237-5567

Liberty Canal Company, 559-867-3123

Murphy Slough Association, 559-866-8600, Mark McKean

Stinson Canal and Irrigation Company, 559-229-4740

Integrated Storage Investigations Project

Alta Irrigation District, 559-591-0800

Consolidated Irrigation District, 559-896-1661

Fresno Irrigation District, 559-233-7161

North Fork Conjunctive Water Management Group (see above)

Tulare Lake Bed Coordinated Groundwater Management Plan - 992-4127

Alpaugh Irrigation District

Angiola Water District

Atwell Island Water District

City of Corcoran

Corcoran Irrigation District

Lovelace Reclamation District No. 738

Melga Water District

Tulare Lake Basin Water Storage District

Private Landowners

Kings River Fisheries Management Program

Kings River Water Association, 559-266-0767

Kings River Conservation District, 559-237-5567

California Department of Fish and Game, 559-243-4005