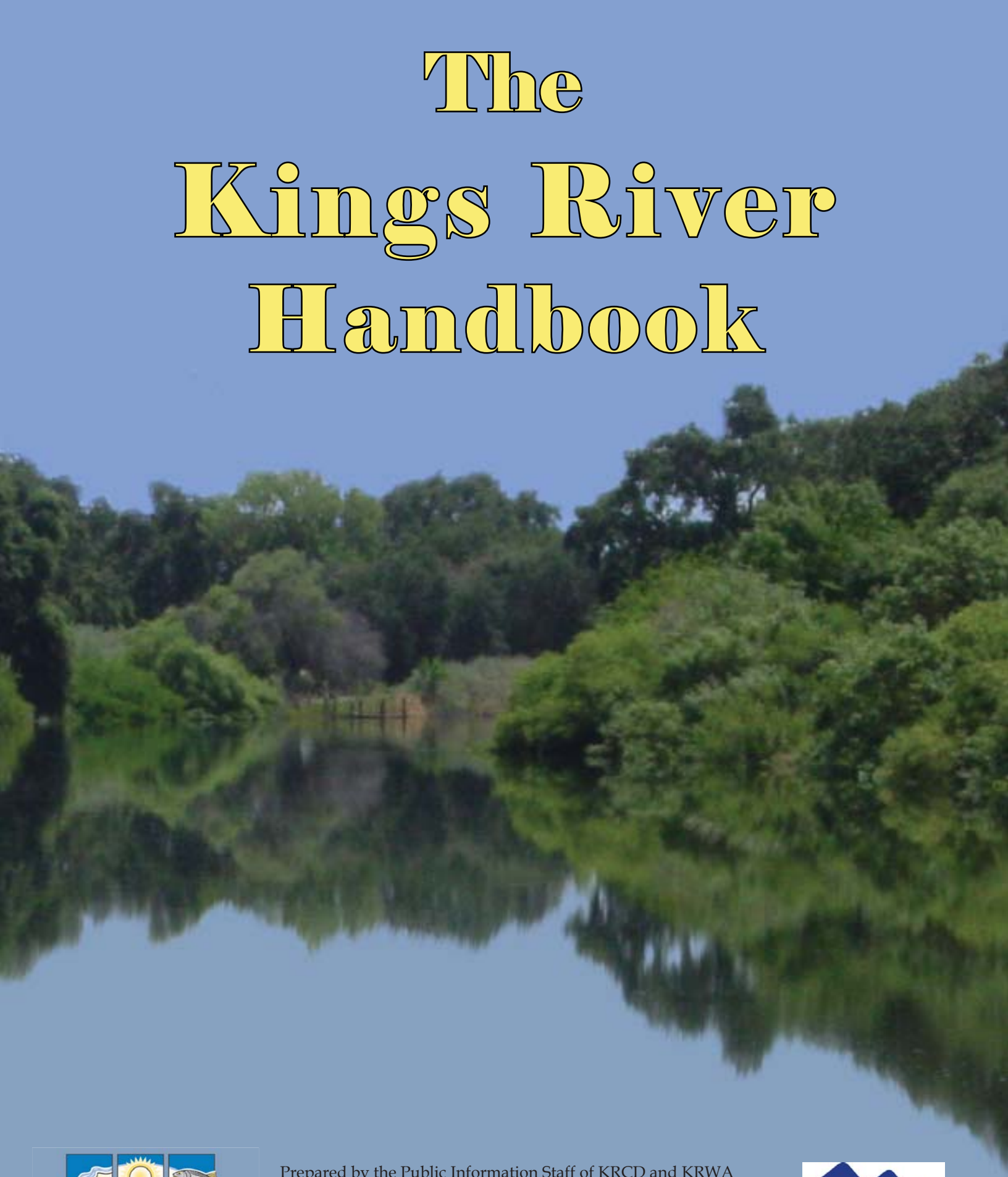
The Kings River Handbook



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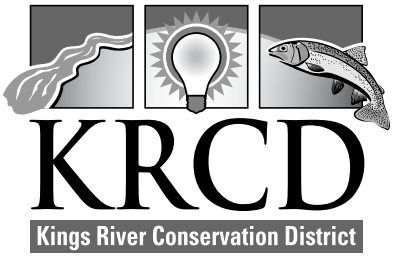

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Introduction

There is nothing in the world quite like the Kings River. The magnificent mountain country in which the river begins is among Earth's most rugged and spectacular. What water from the Kings has created on the land is equally remarkable, a garden of some one million acres that today is an important part of the world's most fertile and productive agricultural region.

It is a living lesson on the value of water in a land of little rain. No resource is more precious to the hundreds of thousands of people who live and work in those portions of Fresno, Kings and Tulare counties watered by the Kings. The river is a stream rich in history. Its waters were often troubled but, with patience and a spirit of cooperation, Kings River users fashioned voluntary agreements on water rights, entitlements and operations that benefited everyone and made possible the development of the river's greatest modern storage and flood management asset, Pine Flat Dam.

Today, faced with enormous population growth and expansion of environmental values, entirely new challenges are being met creatively on the Kings River. Among these are studies, policies, projects and facilities to enhance fish and wildlife resources, including implementation of the Kings River Fisheries Management Program. Urban interests are increasingly and constructively involved in the Kings River. New coalitions of Kings River and municipal water agencies have been brought together with the environmental community and state experts to establish important integrated regional water management planning as a way of the future. Still other efforts are aggressively addressing Central Valley water quality concerns identified by state agencies.

Pine Flat Dam towers over a riparian forest and an angler trying his luck downstream on a summer evening in 2009.

Dealing with the issues of today and appreciating the importance of the river's beneficial uses requires understanding of what has taken place in the past as well as recognition of the river's varied facilities and complex operations. These pages summarize the Kings River, its abounding history, beauty, environmental resources, operations, agreements, uses and incredible value. Although not a large river of commerce or transportation, the river's waters, for all of us and in so many ways, are life. This is what the Kings River is all about.

A Synopsis of Kings River History

The Kings River's rich history has had enormous impacts on the way our region has developed, resulting in a vital and incredibly valuable agricultural heritage and rapidly growing urban centers and settings. The past's mighty struggles have ordained how the river is used beneficially today. This synopsis is not intended to be a comprehensive Kings River history but is a summary based upon information contained in previous Kings River historical abstracts, general histories of the central San Joaquin Valley, contemporary newspaper accounts, and records of the Kings River Water Association, its 28 member units and the Kings River Conservation District.

Beginnings

The River and its Origins

History on the Kings River tends to be measured from its discovery two centuries ago but those years are a drop in time's bucket. Time, of course, did not begin on the Kings when it was first viewed through European eyes any more than it did when human life — that of the earliest Indian tribe members — began along its banks.

Like the mountains that spawned it, the Kings is many millions of years in age. Its waters helped shape the river's Sierra Nevada watershed, between the range's eternally rising ridges, by carrying tiny particles of rock down the mountains' steep slopes. These magnificent geologic forces inevitably caused streams to form and to gather into a river in search of always lower ground.

The rivers stretched westward from the great mountains. The Kings devoted immeasurable epochs to spreading an alluvial fan across the valley floor that not only drove away the ocean but also laid the necessary foundation to ultimately define a new civilization's breadbasket.

And in the eons in which all this so slowly took shape, the river was mostly a study in unvarying natural history, supporting a fairly simple ecosystem and, eventually, a very small human population.

The River's Discovery

The native valley floor created by the river over so long a process was unlike the coastal valleys that encompassed nearly all settlement in Spanish and Mexican California. Much of the valley's prairie was monotonous, dreary and frequently unpleasant. It appealed to few explorers and fewer would-be settlers.

Among its earliest visitors was Captain Gabriel Moraga and his straggling band of Spanish soldiers.

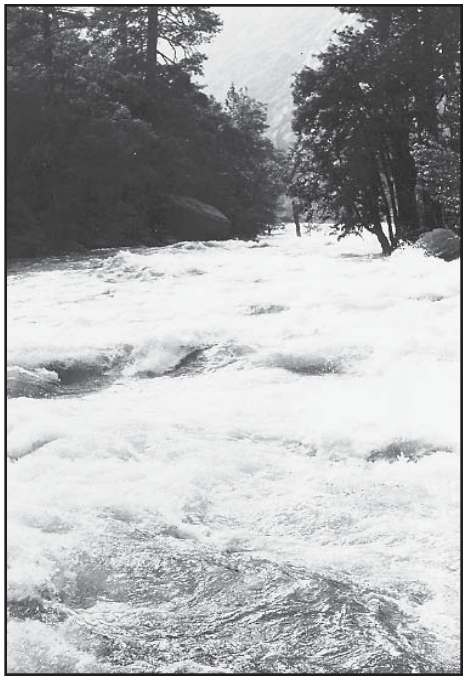
A frozen reservoir of Sierra Nevada snow contains each year's Kings River water supply, unleashed by spring's snowmelt.

On January 5, 1805, Moraga's party discovered a previously unknown stream flowing from the foothills onto the valley floor. Moraga camped along its wooded banks. He and his men were refreshed by its beauty after so many miles of winter travel across the tedious and desiccated plains. The next day, January 6, was the Feast of the Epiphany. It was the inspiration for the river's christening as El Rio de los Santos Reyes — River of the Holy Kings.

As for the Moraga expedition's objectives, what little is known was written by one of the Franciscans, Father Pedro Muñoz. Moraga turned to this Roman Catholic priest as a chronicler of his journeys. Muñoz wrote during a subsequent expedition in October 1806 that the site where the naming took place (a location that has never been identified) was a good one. He said, "All the meadows are well covered with oak, alder, cottonwood and willow. The river abounds with beaver and fish. It is a location suitable for a mission, although there would also have to be a presidio."

There were also abundant water supplies, fertile nearby soils and sufficient aboriginal souls—the area's tribes of Indians—to convert to Christianity and to work in the fields. Father Muñoz later estimated the native population along the Kings River at more than 5,000 in more than ten different tribes.

No missions would ever be developed within the Central Valley. The land's settlement would have to wait.



Kings River runoff, such as this roaring through Cedar Grove, directly depends upon each year's Sierra snowpack.

The river's divine designation did nothing to enhance first impressions of much of what would become the Kings River service area. Those who first saw the country considered it to be desert and of little or no value except for naturally watered areas along the Kings and other rivers. On the Kings' lower reaches were the wetlands of the Fresno Slough-Summit Lake country and Tulare Lake that teemed with lushness and life. Otherwise the plains were devoid of vegetation, except for seasonal grasses.

In 1850, Lieutenant George H. Derby, a U.S. Army topographical engineer, surveyed portions of the Kings River country and the southern San Joaquin Valley.

For the most part, Derby wrote, the land was "barren, decomposed, (with) no trace of vegetation but a few straggling artemisias. . . , scorpions, centipedes and a small but extremely poisonous rattlesnake about 18 inches long ... which, with the gophers and ground rats, are the only denizens of this unpleasant and uninhabited spot."

It was a land without water.

Kings River's Fluctuating Supply

The Kings River is burdened with a reality shared by all southern Sierra Nevada streams. The Kings is prone to extreme annual swings in runoff that directly relate to mountain precipitation. That reality, from the beginning of the Kings River country's settlement in the 1860s until the present, has been occasionally good and just as frequently bad, depending upon how much winter and spring rain and Sierra snow happen to fall.

Annual Kings River runoff averages 1,745,000 acre-feet. The river's all-time minimum runoff, however, was only 391,700 acre-feet (in 1923-24), just 23.1 percent of average.

On the other extreme, the 1982-83 water year produced record runoff of 4,476,400 acre-feet, 264.5 percent of average, only to be followed by an 11-year span that included eight below-average years, including a critical six year drought, which began in 1986-87.

In dry years, then as now, water supplies were insufficient to fully irrigate the nearly 1.1 million acres of highly productive farmland that is watered from the Kings. Since reservoir capacity is generally insufficient to accommodate all runoff in wet years, losses to the water-deficient service area through Kings River flood releases equate to 200,000 acre-feet per year.

Initial Development, Disputes, Solutions

Tapping the Kings River

Initial Kings River service area settlement began in the two decades following California's 1850 statehood in what is now known as the Centerville Bottoms of Fresno County. The first of these, which survives today east of Sanger under management of the Kings River Water District, is tiny Byrd Ditch, built in 1858. Others followed over the next few years. Those primitive ditches were all destroyed or heavily damaged in a massive 1867-68 flood.

Other canals soon followed. The first two of substance included the first version of the Fresno Canal, commissioned in 1870 by A.Y. Easterby and carried out by Moses J. Church and the Lower Kings River Ditch, now known as the Lemoore Canal. The canals brought Kings River water to Easterby's property (east of where Fresno was established in 1872) via Mud and Fancher creeks. Between 1872-74, the Fresno Canal was enlarged and became capable of conveying water onto more of the immense, previously uncultivated prairie between the Kings and San Joaquin rivers.

The newly watered soils turned out to be extraordinarily fertile. They burst into lush plantings (initially mostly of wheat and barley) under the hot, dry, valley climate. Immense crops were produced. The worth of irrigated land was swiftly established.

Over the next 15 years, dozens of canals were constructed downstream, ultimately serving more than one million acres and making possible intense cultivation. Permanent plantings of grapevines and tree fruit became common.

Water from the Kings River made it all possible.

Canals constructed over the years crisscross the valley delivering water to farms from Fresno to the Tulare Lake bed.

Water Rights, Riparian Disputes

Chaos, controversy and court fights ruled the Kings River for decades. Organization and cooperation were minimal at best and nonexistent at worst. It added up to confusion that made it practically impossible for most individual irrigators to know when their canals would receive water or when they might be shut off by upstream users.

More serious were challenges over water rights. Practically from the beginning, pioneer users were plagued by a lack of agreement on water use and entitlements, a situation that soon deteriorated into a massive conflict caused by contradictory laws. Those who pioneered the building of the river's dozens of canal systems simply posted their water claims under the doctrine of prescriptive or appropriative right. The rule, dating from the water-use custom of Mexican California, was simple: First in time; first in right.

Those earliest irrigators soon found themselves challenged by downstream landowners whose properties bordering the river gave rise to claims of what were known as riparian rights. California's first Legislature in 1850, recognizing that much remained to be legislated, had adopted British common law to embrace situations not covered by federal or state laws or Constitutions. The riparian doctrine of common law provided that no one could cause a stream to flow with diminished quality or quantity past a given point, a stipulation that stood in clear conflict with the doctrine of prescriptive rights.

In dry years, riparian owners began demanding that the river's flow remain undiminished along their lands. In Lux vs. Haggin, an 1888 Kern River case before the State Supreme Court, riparianists won their case. In subsequent litigation, lower courts and the State Supreme Court ordered many Kings River canals to dramatically reduce diversions or stop deliveries altogether.

For many years after the 1888 riparian decision, the Kings River water carried in many canals was illegally diverted.

It was not unusual for desperate, water-short farmers to arm themselves and seize headgates to keep water flowing to their land. Such water-supply uncertainty diminished land prices, demonstrating the critical significance of a secure water supply in a land of little rain.

Such conditions inevitably spawned long, complex legal battles. Litigation lasted more than forty years and included many scores of lawsuits.

There were a few signs of progressive change. One was the first Kings River water entitlement schedule, negotiated in 1897 by L.A. Nares. He managed the Fresno Canal and Irrigation Company and Rancho Laguna de Tache. The 1897 accord included only the most senior diverters — the Fresno company and three lower river companies in Kings County, Peoples Ditch Company, Last Chance Water Ditch Company and Lower Kings River Ditch (now the Lemoore Canal and Irrigation) Company.

A small entitlement was provided for the Laguna ranch, a 48,800-acre Mexican land grant (downstream from modern Kingsburg) acquired along with other lower river riparian properties by the Fresno company in 1892 to secure riparian rights then claimed by the Laguna Grant. The 1897 agreement governed only the river's lower flows, below 1,900 cubic feet per second. It was, however, a start. Dozens of lawsuits were dismissed. The agreement was also generally recognized by all of the river's other users. The original schedule's numbers were included in later agreements and remain in use today.

Riparian appropriation issues were settled in a 1928 state election. Added was a state constitutional provision, based on the realities of existing uses, making beneficial use the measure of all water rights, whether appropriative or riparian. It provided that riparian owners would be entitled to no more water than they actually need to serve a beneficial purpose.

The 1921 Agreement and Watermaster Kaupke

Efforts to resolve remaining differences began a long, slow process in 1913.

Users realized that the Kings River's historic contentiousness simply could not be permitted to continue into the future. More importantly, it was understood that a dam at Pine Flat, needed to harness the river, would never be possible until agreements were reached on water

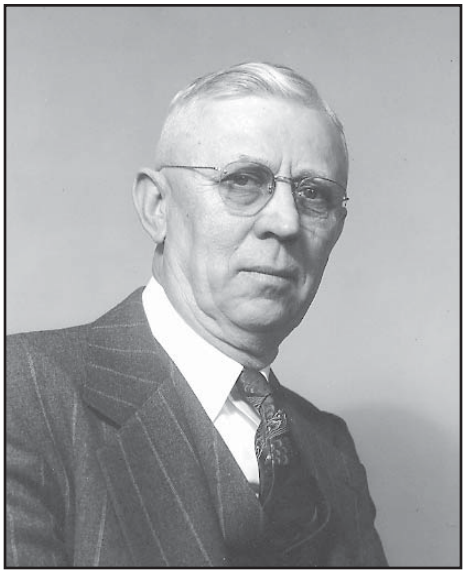
rights and entitlements. By then, nearly all Kings River flows were being put to beneficial use within the service area.

Extensive discussions on the Pine Flat question led to early recognition that an umbrella Kings River agency would ultimately be necessary. In 1916, a group of irrigation leaders known as the Committee of Thirty took as its name the Kings River Water Control and Conservation District. Its objective was implementation of state legislation — a Kings River Conservation District and Pine Flat Dam Act — that had been passed in 1915. The law was twice amended but an operating conservation district did not manage to become reality.

Progress continued, however; in 1917, state irrigation district formation legislation was enacted to supplant the old Wright Act of 1887, a measure that authorized formation of irrigation districts. The Kings River's Alta Irrigation District, organized in 1888, was the second district formed under the Wright Act and that law's then-controversial provisions for publicly administered deliveries of irrigation water. Alta was California's first irrigation district to actually provide water service to users.

A public approach to administering water rights, management and operations gained increasing appeal on the Kings River. Various water diversion schedules were proposed. In that spirit and buoyed by headway which had been made, Kings River users asked the California Water Commission to provide an impartial engineer to determine the river's flows, diversions, canal capacities and historical uses. All were needed before a comprehensive entitlement schedule could be prepared.

Late in 1917, Charles L. Kaupke, a state water engineer, arrived in Fresno and went to work gathering data. His efforts earned considerable respect among the river's diverse diverters. When the 1919 season turned up dry, users unanimously requested that Kaupke be assigned to act as Watermaster and arbitrate diversion issues for the balance of 1919. So satisfied were users that Kaupke was again appointed Watermaster in 1920.



Charles Kaupke
Kings River Watermaster from 1919-56

Other engineers began assisting Kaupke in developing a trial water diversion schedule, based upon the river's mean daily flow. Mean daily natural flow at the Fresno County foothill community of Piedra has always been at the heart of Kings River uses, regulation, stream control and storage. Kaupke's task was to resolve problems, disputes and conflicting claims by finding solutions which complemented that most basic of measurements.

Resolution became a more critical need when some lower river lawsuits were set for trial on October 1, 1921. Most Kings River diverters believed that the litigation would not only be long and costly but would negate much of the progress on entitlements that had already been accomplished. A committee consisting of Kaupke, water engineer J.B. Lippincott and L.A. Nares (who had negotiated the first limited water schedule in 1897) hurried to draft an interim agreement.

On September 27, 1921, representatives of thirty-five agencies accounting for more than 95 percent of the total diversions and a gross area of one million acres signed the pact. It requested the state Division of Water Rights "to prepare a temporary schedule for the division and administration of the waters of Kings River for the calendar year 1922."

As a result, all pending water rights litigation was postponed. Kaupke was again appointed Watermaster. His work was to be funded by $15,000 assessed on a prorated basis to the participating agencies. Another in a series of trial water entitlement schedules was ready for use in 1923. It was refined each year through 1926 and eased much of the river's turmoil.

The 1927 Agreement and KRWA's Establishment

"Year by year, the need for a permanent settlement of the water rights was becoming more apparent," Watermaster Kaupke later wrote.

Between 1923-26, a vigorous second effort was mounted to establish a conservation district legally capable of selling bonds and building a dam at Pine Flat. A Kings River Water Storage District board began meeting in 1925. As was the case in 1915-16, however, the hoped-for public agency was never permanently organized. District board deliberations did directly lead to a lasting Kings River solution.

On May 3, 1927, a voluntary agreement was reached among nineteen diverters (providing water to 958,000 acres). The agreement's entitlement schedule was considerably improved from the trial schedules, reflecting hydrologic data that had been developed over the previous several years. The greatest change was development of separate schedules for each month, acknowledging significant variations in runoff and actual diversions and demands from month to month.

May (when daily mean flows generally peaked) encompassed the maximum 1927 schedule, covering 9,450 cubic feet per second; it represented practical diversion capabilities and capacities of the units. Schedules of other months closely corresponded to records of actual diversions, while respecting and incorporating the senior units' right to divert from the river's low flows. The December table made allocations only on the first 1,000 cubic feet per second.

The accord established the Kings River Water Association. KRWA assumed all duties that had been performed from 1918-27 by the California Water Commission and the California Division of Water Rights. It was to be administered by a Watermaster, a role filled by Charles Kaupke until his retirement in 1956.

Considering the river's history of conflict, the 1927 agreement was a pivotal and remarkable accomplishment, even though it did not then include detailed schedules for either Tulare Lake bed units or the Centerville Bottoms. However, rights of those areas were recognized by the nineteen original KRWA units (as the KRWA's member agencies have always been referred to).

Patient cooperation and progress finally brought peace to the river's once troubled waters.

The Modern Era

The Corps, the Bureau and Pine Flat Dam

The agreement of 1927 was a turning point in Kings River history. More than any other circumstance, the settlement cleared the way for eventual construction of Pine Flat Dam.

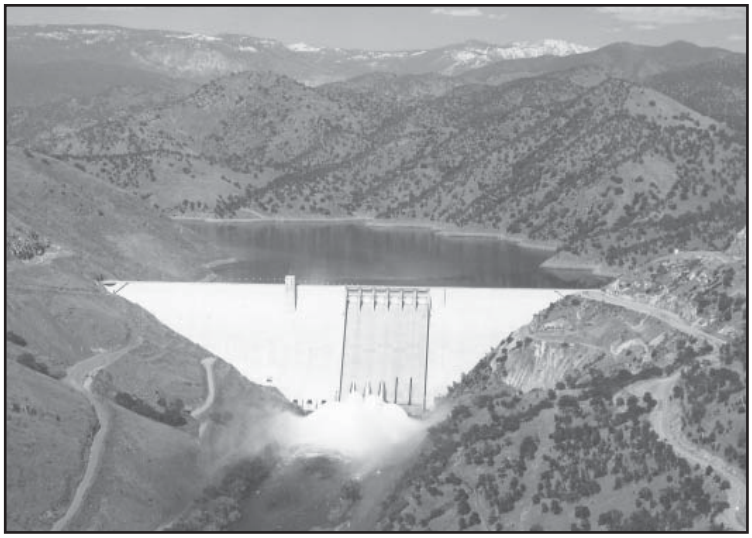
The dam's need and actual site had been obvious as early as the 1880s. At first, water storage and conservation benefits were the appeal for dam development. That changed following disastrous 1906 flooding. The high flows focused attention on the need for flood control. Despite that concern, the project eluded two generations, largely as a result of politics and the practical problem of who would shoulder the cost. When farm prices and property values began to plunge between 1921-23, momentum on the dam project slowed.

On the Kings River, progress has never come easily or quickly. With the Pine Flat project, many false starts followed.

So did a bureaucratic tug of war between two federal agencies. It started in 1937. The Army Corps of Engineers proposed to build Pine Flat as a flood control project, dedicated to benefits on the Kings River. The U.S. Bureau of Reclamation viewed the proposed dam and reservoir as an extension of its Central Valley Project, then in its initial development stages. President Roosevelt complicated the situation by assigning the project's development to each. The two agencies agreed Pine Flat should be built. They differed on basic issues, flood control and conservation values, storage and operations, and, perhaps most importantly, construction costs and local cost contributions. Arguments raged through four years of hearings.

Kings River water users and the Kings River Water Association sided with the Corps of Engineers. KRWA's member units, holders of the Kings' water rights, wanted no part of Reclamation law restrictions or the CVP. State water engineers who conceived the CVP (before it was taken over by the federal government in 1935) eliminated the Kings from their early planning. They recognized that the river's entire flow was lawfully and efficiently appropriated by the river's users, except for infrequent flood flows.

In December 1944, Congress approved a Flood Control Act authorizing Pine Flat Dam to be developed by the Corps of Engineers with KRWA units to pay for the irrigation storage benefit once that amount was determined. For that task, President Truman in 1946 assigned the Bureau of Reclamation to negotiate the necessary contracts. Kings River users again fumed that Pine Flat was being classified as a Reclamation project, despite the expressed will of Congress. Talks went nowhere. Even after Pine Flat Dam's construction was started by



Pine Flat Dam in 1956, two years after its completion made the Kings River dream a reality.

the Corps of Engineers late in 1949, newly elected Representative Cecil F. White made an unsuccessful but highly controversial belated legislative attempt to fully integrate the Kings River and its valuable hydroelectric sites into the Central Valley Project.

Meanwhile, the Corps of Engineers moved ahead with its Pine Flat planning. A basic operational decision, one that governs Pine Flat Project operations to this day, was made by the Corps in January 1952:

- Flood control. The Corps would have complete authority.
- Conservation storage and releases. The Kings River watermaster would be in control.

Pine Flat Dam was completed in 1954 at a cost of $42.3 million, but the often rancorous storage and repayment contract negotiating process with the Bureau of Reclamation dragged on. KRWA and its units joined the Corps of Engineers in contending that all of the new reservoir's space should be available for storage, limited only by Pine Flat's flood control purposes and priorities. Even though the Corps' 1952 administrative decision appeared to imply that the Bureau of Reclamation's role was strictly that of a negotiating agent, KRWA's units knew that Pine Flat Reservoir could not be used for irrigation storage without a Bureau agreement.

The KRCD's Formation

In 1951, the contract situation and other water rights matters helped prompt the third and ultimately successful effort to create the Kings River Conservation District as a public agency that could act for the entire Kings River service area on a variety of river-related issues and potential projects.

Aside from the ongoing Bureau of Reclamation struggle, there were sound reasons why KRCD's establishment was viewed by Kings River interests as necessary:

- Contract Negotiations. No overall public agency existed that was empowered to contract with the United States on behalf of all water users seeking storage rights in Pine Flat Reservoir. The Kings River Water Association, then as now, was a private organization. The Fresno Irrigation District then served as trustee for Pine Flat storage use by all river units.
- Water Rights. A public agency was necessary to receive filings which had been made in 1927 by the state for possible future use in what had been conceived as a state-operated Central Valley Project. The Bureau of Reclamation sought to receive the unappropriated rights. So did KRWA before the water association was told that, as a private organization, it could not be granted the rights. Kings River water users feared that the filings might be used by the Bureau of Reclamation to permanently link the Bureau and Reclamation law with the Kings River.
- Power Development. A regional public agency such as KRCD would be better equipped than an irrigation district to develop hydroelectric projects at Pine Flat Dam and on the North Fork. The Fresno Irrigation District, as trustee for other river units, had applied to develop those projects.
- Conservation Improvements. Development of groundwater recharge facilities, reclamation, flood control and drainage projects had been suggested as possible future KRCD projects.

Special legislation to create KRCD was backed by KRWA and the river's units. It was approved and signed into law on June 8, 1951. KRCD's organization was crafted to closely resemble an irrigation district but with some restrictions on its authority. It was to include the Kings River service area. The district board organized on November 14, 1951. KRCD voters confirmed the district's formation in a referendum on December 18, 1951.

KRCD played a vital role in the Pine Flat contract negotiations. Between 1954-63, the district acted for the river's users in contracting with the Bureau of Reclamation for a series of interim annual Pine Flat water storage contracts. Each acre-foot of stored water cost local units $1.50. Over a period of nine years, $7.8 million was paid to the Bureau.

The 1949 and 1963 Agreements

A 1949 agreement extended the Kings River's entitlement schedule to specify details for diversion by South Fork and Tulare Lake bed units, for the first time including the entire river.

The new agreement increased the maximum flow allocation on the monthly schedules and provided that any flows in excess of the new maximum were to be divided, half to the main Kings River and North Fork units and half to the South Fork units. (Only the Centerville Bottoms area, lacking an administrative structure, was omitted but its water rights remained recognized; that territory's Kings River Water District was organized in 1952.) The 1949 agreement resulted in dismissal of the last three Kings River water rights lawsuits.

Charles L. Kaupke, the first Watermaster, liked to say the litigation's conclusion meant "There was peace on the river for the first time in more than eighty years.... It was the largest peaceful settlement of water rights on a major river to be recorded in the history of Western irrigation." That unfortunately proved to not be entirely accurate because Kings River users still faced many more years of controversial dealings with the U.S. Bureau of Reclamation. Also remaining were difficult entitlement questions related to allocation of Pine Flat Reservoir storage space, as well as issues involving downstream channel losses that resulted from storage behind the new Pine Flat Dam.

Agreements with the Bureau of Reclamation on permanent contracts were not finalized until December 23, 1963, when all twenty-eight Kings River Water Association member units individually signed separate contracts for shares of project repayment and storage space. Users accepted responsibility for repaying $14.25 million, a third of Pine Flat's construction cost, and $750,000 to acquire Kings River water rights claimed by the Bureau of Reclamation on the Fresno Slough (in western Fresno County). The units agreed to pay for 37.4 percent of Pine Flat's operation and maintenance. Extensive efforts by the Kings River Conservation District resulted in users receiving full credit for $7.2 million in interim contract payments toward their repayment obligation. KRWA assumed the duty of handling repayment accountability, as well as overseeing water entitlements and deliveries and administering storage rights for member units.

The construction of Pine Flat Dam created more stable supply of irrigation water, flood control and recreation.

At the same time, a new master Kings River agreement was approved. The units agreed among themselves on how the river should be operated under storage conditions. That included accounting for each unit's share of reservoir storage and downstream channel losses as well as a procedure to account for Pine Flat Reservoir flood releases. Maximum-flow limits on the monthly water schedules were eliminated.

While each Kings River water rights accord represented important progress, the 1963 agreements were most meaningful for finally putting to rest vexing entitlement issues. The Pine Flat storage and repayment contracts gave the people of the Kings River service area exclusive and perpetual rights to 1,006,500 acre-feet of Pine Flat Reservoir's storage space (except for the project's flood control requirements).

The 1963 Kings River agreement and the issues it resolved at last made Watermaster Kaupke's 1949 statement fully accurate. Peace indeed finally came to the Kings, more than a century after the river's beneficial development began.

Full Appropriation

Formalizing the Kings' water rights, like so many other parts of the river's puzzle, required many years to accomplish.

Acting independently of one another, Kings River water users began filing a total of nine applications to appropriate Kings River water not long after what was then known as the State Water Rights Board (now the State Water Resources Control Board) was established in 1914. In time, more than 100 protests were filed against these applications.

As a result of the 1963 intra-association agreement, the Kings River applications were consolidated by a trust agreement on September 16, 1964. The Fresno Irrigation District acted as trustee on behalf of all KRWA members.

Midway between Piedra and the river's emergence onto the valley floor, Cobbles Weir is the Kings' first diversion structure.

The application was considered by the State Water Rights Board during 15 days of hearings between April 4 and July 20, 1967. The result, on November 30, 1967, was Decision No. 1290. It issued six water rights permits, which included storage in Pine Flat Reservoir, Lake Wishon, Courtright Lake and Tulare Lake along with virtually all Kings River water. The Water Resources Control Board declared on November 16, 1969, that the Kings River's waters were fully appropriated.

On May 18, 1984, some 126 years after Kings River diversions began, water rights licenses were issued. KRWA became the trustee in the spring of 1988.

Reclamation Law Dispute

For KRWA and its member units, Pine Flat Dam's completion and eventual progress on storage agreements did not mean an end to difficulties with the U.S. Bureau of Reclamation.

The Kings River Water Association contended that Pine Flat Dam's primary purpose had always been flood control. From an irrigation standpoint, the dam did little to increase the water supply in most years. Its principal benefit, aside from flood control, was in regulating well-established, privately held rights, making possible the use of water when it was most needed for spring and summer irrigation. No longer was it necessary for KRWA's units to rely on the "run of the river" to divert their water entitlements.

Issues arose over whether or not federal Reclamation law should apply to the Pine Flat project and, if so, if repayment of project costs allocated to irrigation benefits would terminate Reclamation law acreage limitations.

A 1961 Interior Department legal opinion reversed the United States' long standing policy and administrative practice that had relieved Kings River landowners of Reclamation law acreage limitations after their local agency's Pine Flat Project repayment obligations had been met.

Imposition of Reclamation law angered Kings River units and users. Essentially all Kings River service area lands were developed and ownership patterns were established long before Pine Flat Dam was developed. Except for the Tulare Lake bed, where the constant threat of severe flooding makes small-scale agriculture economically infeasible, farming in nearly all of the Kings River service area has typically been on small parcels.

The Bureau of Reclamation rejected then-pending contracts with KRWA members but agreed to a test case of issues.

In 1972, a U.S. district court ruled that Reclamation law did not apply to the Pine Flat Project. Even had Reclamation law applied, it would have been terminated by repayment of irrigation storage costs.

A federal appeals court reversed the decision, however, and in 1977 the Supreme Court declined to hear the case.

The issue was finally resolved by Congress in the 1982 Reclamation Reform Act. That measure specifically exempted the Kings River and other San Joaquin Valley Corps of Engineers flood control projects (such as Terminus and Success dams on the Kaweah and Tule rivers, and Isabella Dam on the Kern River) from acreage limitation restrictions and other provisions of Reclamation law.

Flood Protection and Power Generation

Although the U.S. Army Corps of Engineers constructed flood control works along the Clark's Fork north of Lemoore beginning in 1943, most downstream channel and levee improvement projects were undertaken starting in 1959 by the Kings River Conservation District. These projects were directed at protecting flood-prone lands in Kings and western Fresno counties as well as improving the river's capability of carrying flood releases from Pine Flat Dam or uncontrolled flood flows from Mill and Hughes creeks (which enter the Kings downstream from the dam).

Work continued for the next sixteen years. Improved channel capac-

ity preserved the amount of conservation storage space available for irrigation use in Pine Flat Reservoir.

Additional storage and power generation facilities became Kings River goals at an early date.

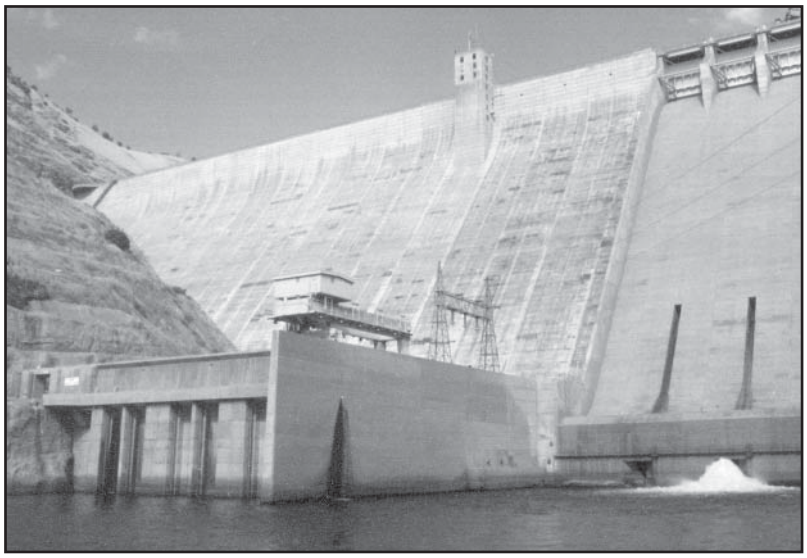
When Kings Canyon National Park was created in 1940, its boundaries excluded two potential reservoir sites, in Cedar Grove on the South Fork and remote Tehipite Valley on the Middle Fork. Those sites were annexed into the park in 1965 and removed from development consideration.

A KRCD master plan, adopted in the early 1970s, proposed development of a Pine Flat Dam power plant, a Piedra afterbay reservoir (to re-regulate flows), a Dinkey Creek reservoir (with two power plants), raising Pine Flat Dam, a dam and power plant at Rodgers Crossing (on the Kings River above Pine Flat), and a dam on Mill Creek (upstream from its confluence with the Kings River).

Only the Jeff L. Taylor-Pine Flat Power Plant, which went into commercial service in 1984, has been developed. KRCD sells the electricity generated at Pine Flat to the California Department of Water Resources for powering State Water Project pumping facilities. The plant uses only irrigation and flood control water releases (on a stream-flow basis) from Pine Flat Dam to generate electricity.

KRCD's Dinkey Creek project moved to within two months of the start of construction in 1986 when plans were halted for lack of a purchaser for energy the project would generate. That failure in part resulted from delays caused by environmental litigation challenging parts of the Dinkey Creek plan as well as a dispute between Pacific Gas and Electric Company and the California Public Utilities Commission over related issues.

A Rodgers Crossing Reservoir and power project on the river upstream from Pine Flat Reservoir was studied intensely by KRCD between 1972-87. Creation by Congress (through passage of the Forest System Act in 1987) of a special upper Kings River federal management area between the elevations of 995 and 1,590 feet put the Rodgers Crossing project into dormancy. An act of Congress would now be required for the dam's development.



KRCD's Pine Flat Power Plant, completed in 1984 was the first Kings River master plan project to be completed.

On the North Fork, the potential for hydroelectric power development had been recognized in the 20th century's earliest years. San Joaquin Light and Power Corporation (SJL&P) in 1927 developed the Balch Powerhouse, a stream-flow generating plant, along with diminutive Black Rock Reservoir as a forebay.

More than 25 years of dispute between Pacific Gas and Electric Company (SJL&P's successor), the Bureau of Reclamation and Kings River interests (represented by the Fresno Irrigation District) delayed further North Fork power development.

Work finally began on PG&E's Kings River project in 1955. Built were Courtright Lake, Lake Wishon, Haas Powerhouse (first underground power plant in the United States), the Kings River Powerhouse at the upper end of Pine Flat Reservoir and other facilities, including enlargement of Balch Powerhouse. In 1984, the PG&E Helms Pumped Storage Project and its underground generating-pumping facility between Lake Wishon and Courtright Lake were completed.

Two small off-stream reservoirs near the General Grant Grove section of Kings Canyon National Park are remnants from the Kings watershed's logging history. Sequoia Lake on Mill Flat Creek was developed in 1889 and Hume Lake on Tenmile Creek was created in 1909 to supply water for a spectacular flume – largely along the Kings River – that transported roughly milled timber to a mill in Sanger. Hume Lake Dam, designed by pioneer engineer John S. Eastwood (who conceived of the Big Creek hydroelectric project on the San Joaquin River), was the world's first multiple-arch dam. Although both are still used heavily for recreation, neither reservoir plays any role in modern Kings River operations.

Fish and Wildlife

Water resource development and management has expanded over the decades to focus on maintenance and enhancement of a healthy Kings River fishery. Kings River fishery issues began gaining attention in the 1950s, following completion of Pine Flat Dam. On September 11, 1964,

KRWA and the California Department of Fish and Game (CDFG) entered into a comprehensive agreement aimed at preserving, protecting, maintaining and enhancing fish and wildlife resources downstream from Pine Flat. The agreement's key element was establishment of the first minimum flows for fishery purposes below Pine Flat Dam.

A great deal of environmental debate, including a 1991 public trust complaint filed by anglers and other river interests, led to new attention being focused on the Kings River's fishery. Much of this centered on U.S. Army Corps of Engineers fish and wildlife studies directed at mitigating effects created by development of Pine Flat Dam and Reservoir.

Ultimately, this prompted a Corps project sponsored locally by KRCD (with backing by the KRWA) that from 2000-2003 created a turbine bypass system at the base of Pine Flat Dam. The turbine bypass permits water to be released through the penstocks, for fishery temperature control purposes, at times when KRCD's Jeff L. Taylor-Pine Flat Power Plant is not in operation.

Looking down from the top of the dam at the Jeff L. Taylor-Pine Flat Power Plant. The large pipes emerging from the dam are penstocks carrying water to the turbines. The smaller pipe system at the dam's base is part of the new turbine bypass.

Next, an entirely new and broader cooperative partnership was conceived, agreed upon and implemented. This was the Kings River Fisheries Management Program, in which the KRWA, KRCD and California Department of Fish and Game established what was quickly recognized as a model for consensus-based adaptive management among water, fish and wildlife, and environmental interests. The program's agreements were signed May 28, 1999.

Along The Kings River

The Kings River rises in the highest Sierra ranges of Fresno and Tulare counties. It flows through scenic canyons before being tamed by a great reservoir. Its waters are put to work in the generation of hydroelectric power and in irrigating a million of the Earth's most fertile acres. A rapidly growing population relies heavily upon the Kings River's resources for groundwater that the entire service area uses for domestic purposes. Its anglers delight in matching wits with fish that call the Kings River home. Its neighbors respect the river's unpredictable nature and its ability to be transformed from friend to foe with powerful floodwaters that are not always easily tamed, or by dry conditions that reduce its natural flows to a trickle. The Kings' passage from mountains to valley is surprisingly involved. Many important locations, structures and facilities, in an environment of splendid and inspiring beauty, are to be found along its course.

The High Sierra

Mount Goddard, near which the Kings River's North and Middle forks begin their journey to the thirsty San Joaquin Valley.

Headwaters

The Kings River's beginnings are near the Sierra Nevada crest, within Kings Canyon National Park in easternmost Fresno and Tulare counties. Towering granite peaks with elevations of more than 13,000 feet surround and help supply the headwaters of all three Kings River forks with water from rain, melting snow, springs and some small glaciers.

South Fork

The best-known branch because of its accessibility, its course begins in remote Upper Basin at an elevation of 11,800 feet, just below 12,740-foot Mather Pass (27 miles east of Lake Wishon). The South Fork tumbles through Paradise Valley before turning west to flow through beautiful Kings Canyon. Its descent is abrupt. Cedar Grove, 28 miles from the headwaters, is 7,100 feet lower in elevation than Upper Basin. Supporting the South Fork are important tributaries such as Woods Creek, Bubbs Creek and Roaring River.

Middle Fork

The most secluded and seldom visited fork, its course is nearly completely within designated wilderness. It originates in Helen Lake (elevation 11,595 feet), immediately below Muir Pass and 17 miles east of Courtright Lake. After flowing a few miles toward the east, the Middle Fork arcs into the grand, lonely depths of Tehipite Valley, 27 miles distant and 7,400 feet lower.

North Fork

Although shorter and smaller, its waters are the hardest working, having been harnessed by Pacific Gas and Electric Company to generate clean hydroelectric power. The North Fork rises in 10,803-foot-high Ambition Lake, flanking the LeConte Divide. Sixteen miles and 4,300 feet in elevation downstream, the North Fork reaches Lake Wishon and the PG&E system. Major tributaries are Helms and Dinkey creeks.

PG&E Power Plants

An extensive hydroelectric generation system, developed as three distinct projects by Pacific Gas and Electric Company (and its predecessor, San Joaquin Light and Power), stretches along the North Fork. PG&E's Courtright Lake (elevation 8,144 feet) on Helms Creek, with a capacity of 123,300 acre-feet, is the uppermost Kings River system reservoir. Three miles downstream is Lake Wishon, with a capacity of 128,400 acre-feet. Both reservoirs were completed in 1958.

Between, connected by tunnel, is the big Helms Pumped Storage Project underground powerhouse, completed in 1984; its pumping capability permits water to be reused for additional hydroelectric generation. Water from Lake Wishon is tunneled to Haas Powerhouse, the nation's first underground power plant when it was completed in 1958. At tiny Black Rock Reservoir (at an elevation of 4,500 feet) water flows into another tunnel leading to Balch Powerhouse at Balch Camp (established in 1927 originally as a stream flow plant). From a small afterbay at Balch Camp, water is conveyed by tunnel to PG&E's Kings River Powerhouse which, at an elevation of 1,000 feet, discharges directly into Pine Flat Reservoir.

Undeveloped Reservoir Sites

At various times, many other Kings River reservoirs and power projects were proposed. Reservoir sites on the Middle Fork (in Tehipite Valley) and South Fork (at Cedar Grove), which the new Kings Canyon National Park acknowledged and avoided when its boundaries were drawn in 1940, were annexed to the park in 1965 and removed from development consideration. A site at "The Junction" of the Middle and South forks was found to be impractical. Rodgers Crossing, on the mainstem Kings River in foothill country above the confluence with the North Fork, had long been recognized and studied as a major reservoir site. In 1985, the Kings River Conservation District began a feasibility study.

The proposal generated substantial controversy over environmental

issues. In April 1987, Congress (in the Forest System Act) approved a compromise plan to create a special federal management area between the elevations of 995 and 1,590 feet. The law permits studies to be conducted but an act of Congress would be required before there could be any reservoir development within the management area. No such project is contemplated.

Another KRCD upper-river project, including a reservoir and two power plants on Dinkey Creek above Balch Camp, nearly became reality during the same period. Plans were halted within two months of the scheduled start of construction in 1986. Attempts to negotiate a power-sale agreement were unsuccessful because of a dispute between the power purchaser, Pacific Gas and Electric Company and the California Public Utilities Commission.

Two potential low-elevation reservoirs — an off stream site on Mill Creek in Wonder Valley (southwest of Pine Flat Dam) and a Piedra Afterbay — have never been developed.

Wild and Scenic River

The mainstem Kings River and South and Middle forks are federally designated as a wild and scenic river above the elevation of 1,590 feet.

Pine Flat Dam and Reservoir

Project Origins

Need for a large dam and reservoir at Pine Flat, in the Sierra Nevada foothills 23 miles east of Fresno, for flood control and beneficial water conservation storage was recognized in the early 1880s. Decades of preliminaries were required. Pine Flat Dam was authorized as a part of the 1944 Flood Control Act. Although ground was broken in 1947, construction did not begin in earnest for another two years. The dam, an Army Corps of Engineers flood control project with compatible water storage conservation benefits, was completed in 1954.

Pine Flat Dam

An impressive concrete structure, it spans a narrow canyon a few miles above the Fresno County foothill community of Piedra. (*Please see map, Page 47.*) The dam stands 429 feet in height and, at its crest, is 1,820 feet in width. Its construction cost $42.3 million, of which Kings River users were assessed $14.25 million (most of which has been repaid) for the 37 percent of the project determined to be Pine Flat's storage conservation benefit. The dam is operated by the Army Corps of Engineers.

Pine Flat Reservoir

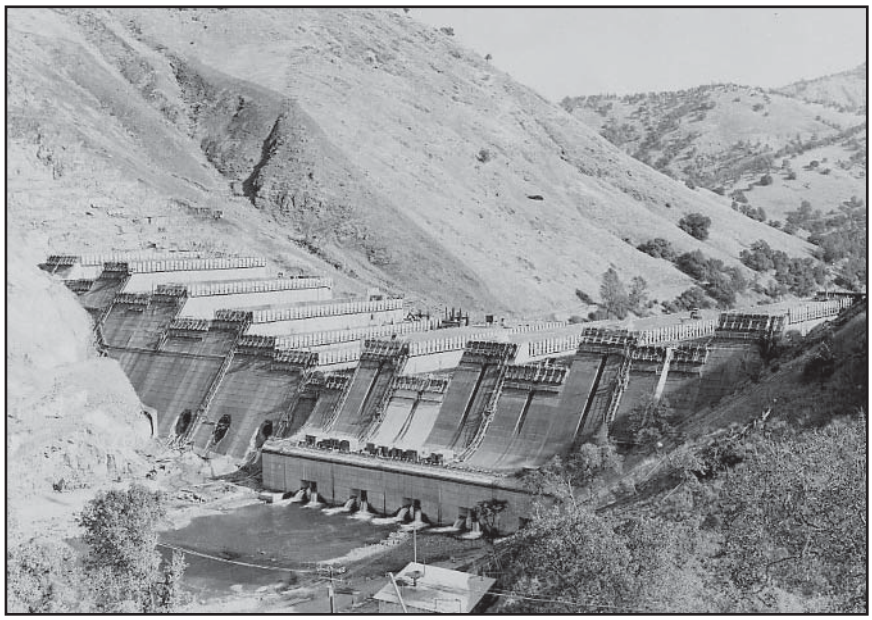
The lake impounded by Pine Flat Dam is the largest reservoir on any southern Sierra stream. The one million acre-foot reservoir, when full, covers 6,000 acres and stretches 20 miles into the oak forested foothills with 67 miles of shoreline. Its gross pool elevation is 951.5 feet above sea level.

Temperature Control Pool

Since the Kings River Fisheries Management Program was established in 1999, KRWA's member units have modified operations to maintain Pine Flat Reservoir storage of not less than 100,000 acre-feet, subject to conditions beyond reasonable control of the KRWA and its members. This helps maintain a pool of cool water for use in reservoir and downstream fisheries under many, although possibly not all, critically dry conditions. Pine Flat Reservoir previously had no minimum storage requirement.

Outdoors Activities

The Pine Flat Project created substantial outdoors activities and fishery benefits (but without cost allocations for those benefits). Pine Flat Reservoir and the foothill region provide extensive recreational opportunities, including fishing. The reservoir fishery is particularly prized by anglers. The lake is also popular with boaters and water skiers. White water rafters enjoy the river above Pine Flat. Nature lovers value the foothill flora and fauna which thrive around Pine Flat. Six campgrounds



Pine Flat Dam takes shape in 1950. The concrete gravity dam was built in blocks 50 feet wide and five feet high.

are available and picnic sites may be found above the reservoir and along the river below the dam.

KRCD's Power Plant

The Jeff L. Taylor-Pine Flat Power Plant, completed in 1984, is located at the dam's base. It is owned and operated by the Kings River Conservation District and is named for the District's late long-time General Manager. The plant's three units each have an installed capacity of 55 megawatts but generate only when water is released to meet irrigation demands or flood release requirements. No generation is possible when Pine Flat Reservoir storage reaches certain low levels. The plant's average annual energy output is 406 million kilowatt-hours. All Pine Flat energy is purchased from KRCD by the California Department of Water Resources for use in powering the State Water Project's pumps.

Water Entitlements

The river and reservoir are whole sums but, by right, their water has many masters. The Kings River Water Association's (KRWA) 28 member units (agencies) hold all rights to beneficial use of Kings River water. This water is apportioned, reservoir storage is administered and diversions are administered by a Watermaster who manages the KRWA under complex agreements and water schedules.

Kings River entitlements are, in a very real sense, determined by the river itself. Under the Kings River agreement, there are 12 water entitlement schedules – one for each month. The amount of water each KRWA member unit is entitled to divert is based upon the calculated mean daily full natural flow at Piedra, as it would have occurred if there were no dams. All of these flow levels and entitlements are listed on the water schedules. There are substantial differences among the monthly schedules' divisions.

In Pine Flat Reservoir, KRWA members have contracted for 1,006,500 acre-feet of storage space. KRWA's member units decide independently whether to store or release their respective entitlements. As a result, Pine Flat Reservoir functions very much like a bank with 28 separate accounts. The Watermaster's staff accounts for each unit's share of reservoir storage, and manages Pine Flat Dam water releases and deliveries to KRWA units' respective points of diversion upon the units' orders, although flood releases are directed and administered exclusively by the U.S. Army Corps of Engineers.

This upstream picture of Pine Flat Dam during construction shows the penstock intake structure on the right that were built for the future construction of a power plant.

Flood Flows

Before Pine Flat Dam was developed, Kings River flooding was always a threat. The Kings is prone to two types of flooding, rainfloods and snowmelt floods. Downpours of rain over the foothills and mountains can create extremely high peak flows but generally of brief duration.

The maximum natural flow ever measured or calculated on the Kings River occurred January 3, 1997 and amounted to 112,000 cubic feet per second. This flow was only exceeded in recorded history by an 1867 flood which, based upon observations and recollections of valley pioneers, apparently surpassed any event which has occurred since in both volume and peak flow. No stream gaging facilities were then in existence.

Snowmelt runoff flows in the April-through-July period do not reach such extreme peaks but yield a much greater total volume of water over a longer period. Pine Flat Dam has largely controlled flood flows originating above the reservoir. However, extraordinary snowmelt years (such as 1969 and 1983) require a concentrated and coordinated effort to dispose of huge volumes of water while minimizing flood damage potential along lower river channels and in the Tulare Lake bed area.

The River
Pine Flat to State Route 99

Fishing and Recreation

The nearly 30 miles of the Kings River from Pine Flat Dam to just below State Route 99 near Kingsburg are favorites with many recreation and outdoors enthusiasts.

Along the river in the Piedra area are Fresno County's Choinumini and Winton parks. Between Kings Canyon Road (State Route 180) and the Olsen Avenue bridge in Reedley,

tubing and canoeing are popular summer river pastimes. A number of Fresno County undeveloped parks line portions of the Kings River, maintaining open space. Fishing access has been developed to the Kings' left (southeastern) bank, with a small parking area located along Piedra Road, for anglers interested in walking to a remote reach of the river's catch-and-release zone near Fresno Weir and the Friant-Kern Canal that is popular for fly fishing.

Reedley Beach and other beaches at privately operated resorts that line the river provide opportunities for swimming. In the eight miles between Reedley and Kingsburg when the river's flow is sufficiently high, boating and water skiing are enjoyed, activities possible on no other southern San Joaquin Valley stream.

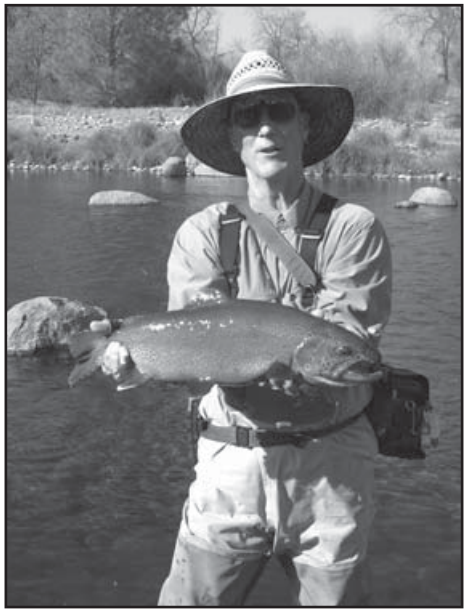
River Below Pine Flat Dam

Below Pine Flat Dam and downstream from the confluences with Mill and Hughes creeks, the Kings River carries the entire release from the dam as well as the creeks' uncontrolled flows. The channel's capacity between the dam and Kings Canyon Road (State Route 180) is listed by the Corps of Engineers as 50,000 cubic feet per second (c.f.s.). From that point to Peoples Weir (south of Kingsburg), the channel's listed capacity is 13,000 c.f.s.

Minimum Fishery Releases

Since the Kings River Fisheries Management Program became effective on May 22, 1999, minimum releases from Pine Flat Dam have been nearly double the previously typically required minimum flows.

KRWA members now provide enhanced minimum flows of at least 100 c.f.s. at Piedra. These enhanced flows, usually in late summer, fall and winter months, help maintain water temperatures and habitat from Pine Flat Dam to Fresno Weir (about nine river miles downstream) that are suitable for trout. Flows of



A happy angler displays a trophy-sized trout planted occasionally in the river below Pine Flat Dam by the California Department of Fish and Game.

between 35-45 c.f.s. (depending upon the time of year) over Fresno Weir and into the lower river are now required. From 1964-98, minimum releases were governed by an agreement between the KRWA and CDFG that required minimum flows of 50 c.f.s. (at most times) at the head of the Centerville Bottoms.

Mill and Hughes Creeks

These tributaries enter the Kings between one and three miles below Pine Flat Dam. Their flows, normally insignificant or even nonexistent, are uncontrolled. In the heaviest storms, these and other low foothill streams are capable of generating substantial peak flows of usually brief duration. In extreme cases, flow volumes can total many thousands of cubic feet per second.

A gaging station is located on Mill Creek just upstream from the Kings River. Hughes Creek contributes a calculated amount equal to 12 percent of the flows generated by Mill Creek. The Watermaster apportions the two creeks' flows based on the river's water schedule. Some Kings River units gladly accept their shares of water from Mill and Hughes creeks to help recharge the valley's groundwater reservoir. Flow remaining in the lower river also percolates into the water table. Other smaller downstream tributaries, such as Fish and Wahtoke creeks, do not figure into Kings River water entitlements.

Cobbles Weir

Midway between Piedra and the river's emergence onto the valley floor, Cobbles Weir is the Kings' first diversion structure. Water can be directed through Cobbles Gate into the '76 Channel off the river's left (south) bank, which is operated by the Alta Irrigation District. The channel conveys water four miles to the Alta headgate at Frankwood Avenue near Minkler, the Alta Irrigation District's actual point of diversion into the Alta Canal, a conveyance constructed in 1882-83. When the Alta system is not operating, flows are usually not permitted in the '76 Channel.

Dennis Cut and Byrd Slough

Water conveyed in Dennis Cut, a small channel that leaves the main river near Avocado Lake, also reaches the Alta headgate. Dennis Cut serves various points of diversion within the Kings River Water District, including water released on a year-round basis back toward the river through the Alta Wasteway (just upstream from the Alta headgate) and the Kings River's pioneer irrigation canal, Byrd Slough, through the Centerville Bottoms.

Avocado Lake

Along the left bank, Avocado Lake occupies a former gravel pit that supplied material during Pine Flat Dam's construction. During construction, the Corps of Engineers continuously ran trains filled with gravel over a now-abandoned Santa Fe branch rail line that was extended from its terminus in Piedra to the dam site. Avocado Lake is now a Fresno County park.

Kings River water completely blankets the structure as it flows over Fresno Weir, the operational boundary between the upper and lower river.

Gould Weir

First of two Fresno Irrigation District diversion points, both on the right (north) bank, Gould Weir pools water for diversion into the Gould Canal, which in turn supplies water to FID's Enterprise Canal and the northern and northwestern portions of the district. The canals were completed in 1874. Gould Weir is located two miles below Cobbles Weir and a mile upstream from the Friant-Kern Canal.

Fresno Weir

Three miles northeast of Centerville, a low-profile structure constructed in 1905 and known as Fresno Weir spans the river. It pools water for diversion off the river's right (west) bank into the Fresno Irrigation District's Fresno Canal and through the Consolidated Irrigation District's headgate. The weir replaced earlier barriers of rock and brush that had to be replaced after each round of high water. The Fresno Canal, which in 1870 pioneered major Kings River irrigation development, conveys water to Fancher Creek and into the Fresno district's central and southern portions.

The Consolidated Canal, with a capacity of 2,000 c.f.s., is the Kings River's largest single point of diversion. Less than two miles downstream, the Consolidated Canal divides into CID's two primary distribution channels, the Centerville and Kingsburg (C&K) and Fowler Switch canals. A small amount of water conveyed for the Kings River Water District's China Slough also passes through the Consolidated headgate. The C&K was built in 1878 and the Fowler Switch in 1882-83.

Immediately upstream, the federal Central Valley Project's Friant-Kern Canal crosses under the Kings River through a 3,200-foot siphon as it delivers San Joaquin River water along the valley's east side. A control structure and channel known as the Kings River Wasteway permit Friant water to be delivered at Fresno Weir to the CVP's only long-term Kings River service area contractors, the Fresno Irrigation District and the City of Fresno, or any temporary Kings River service area users of Friant water.

Centerville Bottoms

Located east and northeast of Sanger, this rich and beautiful delta contains many wooded areas and complex, secluded sloughs supplied by the Kings that ultimately flow back into the main river. The area is served by the Kings River Water District's many small channels that utilize 17 diversion points. One of these, beginning near Annadale and MacDonough avenues east of Sanger, is historic Byrd Ditch, built in 1858 as the Kings River's first canal. At the lower end of the Centerville Bottoms, the river turns and flows east for a few miles before bending south into the Reedley Narrows (near the Adams Avenue alignment), a reach in which the river is constrained by bluffs. There are no KRWA points of diversion from above the Reedley Narrows to State Route 99 near Kingsburg.

Pioneer Settlement Sites

Centerville (on State Route 180, 15 miles east of Fresno) was founded on high ground in 1868 after the pioneer town of Scottsburg, established in 1853 a mile to the southeast, was washed away by floods in 1861 and 1867. Eight miles downstream and below the modern alignment of Adams Avenue was Poole's Ferry. The ferry, a Kings River crossing on the old Stockton-Los Angeles stagecoach road, was operated from 1852-55. At the site of today's Olsen Avenue bridge in Reedley was Smith's Ferry, which operated from 1855-74 along with a hotel.

Reedley

The only city through which the Kings River flows, Reedley is in southeastern Fresno County. A number of attractive residential, resort, park and recreation areas (including Smith Ferry Park, Reedley Beach and Cricket Hollow Park) adjoin the river, as does the campus of Reedley College. Two miles below Reedley (at the Nebraska Avenue-Avenue 424 alignment), the river crosses from Fresno County into Tulare County.

Kingsburg

Next, the river flows southwesterly into the Kingsburg area. It provides a pleasing nearby backdrop for the Kings River Country Club on Avenue 400 (State Route 201) and nearby residential areas east of the city. Kingsburg, located along State Route 99, is about a mile north of the river.

State Route 99 to Army and Island Weirs

Lower River Channel Changes

As far downstream as just below State Route 99, the Kings River's course of today would be familiar to anyone who had known that reach in the pre-settlement era of the early 1850s. Below State Route 99, however, Kings River channels are completely different than they were historically.

Under natural conditions, nearly all Kings River flows were discharged into old Tulare Lake. A series of delta sloughs, streams and at least one larger channel diverged across what is now northern Kings County, flowing southwesterly into the lake, the Kings' natural terminus. Those are mostly gone now as a result of agricultural development decades ago. Lower Kings River water management changes made in the early twentieth century now permit Kings River water to reach the Tulare Lake bed only for scheduled irrigation deliveries or during rare much-above-average water years when high flood release flows are necessary.

Except in flood times, little or no Kings River flow managed to find its way through what was known as the "Fresno Swamp" on the valley's West Side to reach the San Joaquin River. Floods and channel development changed all of that. While most of the river's old side channels no longer exist, the river channel itself is far more unified, even though some contemporary lower river reaches did not even exist in the 1850s. Although nature never intended it that way, flood management and farmland reclamation decisions made long ago now send most Kings River floodwater north to the San Joaquin River instead of south into the Tulare Lake bed.

Peoples Weir and Pool

The abrupt transition between former and present conditions begins at Peoples Weir. Largest of all such Kings River structures, the weir spans the main channel 1½ miles south of the Fresno County community of Kingsburg and one mile downstream from State Route 99, just inside the northeastern corner of Kings County.

Peoples Weir is the largest diversion structure on the Kings River.

Created is a large pool from which water may be diverted into the Lakelands Canal, which flows from the left (south) bank 25 miles to the Corcoran area, or into the Peoples Ditch, which began service into what is now Kings County in 1873. Those privately operated canals deliver water to users in a substantial portion of eastern Kings County, all the way to the Tulare Lake bed. The weir is generally the river's lower limit (when flows are at safe levels) of boating and water skiing. Its pool extends about three miles upstream to just above the Avenue 400 bridge, east of Kingsburg. Along with creating a popular water recreation area, the pool aids KRWA in managing lower river deliveries.

Old River

The original Kings River channel makes an abrupt turn toward the south a few hundred yards below Peoples Weir. In 1867, what is believed to have been the greatest Kings River flood since initial settlement of the region, began deepening an entirely new channel that may have originated as a canal and been further carved during an 1861 flood.

The river itself eventually caused a natural plug to form across the original channel, now known as the Old River. Except at times of exceptionally high flows, it has since remained dry. Under a 1967 California Water Rights Board decision, an Old River headgate was constructed on the Peoples Canal two miles south of Peoples Weir. The old channel, now operated by the Kings County Water District, receives water for groundwater recharge purposes in good water supply years. The channel meanders around Burris Park and through northeastern Kings County before reaching its confluence with Dutch John Cut below State Route 43, east of Laton.

Kings County Water Bank

In 2002-03, the Kings County Water District purchased several hundred acres of Old River channel and adjoining land within the former Apex Ranch, which it has developed into a groundwater banking and recharge facility.

Cole Slough

Apparently a rather small canal in its original form, it emerged from the 1861 and 1867 floods as the pri-

A rare big-water-year flow dampens the Kings' original channel, the Old River, near Kings County's Burris Park.

mary riverbed. Today Cole Slough remains the Kings' main course below Peoples Weir and through northeastern Kings County, south and southwest of Kingsburg. There are no KRWA points of diversion between Peoples Weir and just upstream from Laton. The combined capacity of Cole Slough, the Old River and main Kings River channels between Peoples Weir and Laton is listed by the Corps of Engineers as 11,000 cubic feet per second.

Dutch John Weir and Cut

The main (Cole Slough) channel divides one mile above Tenth Avenue (State Route 43). Downstream water demands and operational factors determine which way water will be directed. Dutch John Weir controls flows into Dutch John Cut, the southerly and larger channel (carved out of a small ditch off Cole Slough during the massive 1867 flood event). Dutch John Cut joins the Old River just below State Route 43, three miles east of Laton, to become the main Kings River.

Cole Slough Weir

Cole Slough Weir is located a few hundred feet from Dutch John Weir upstream from State Route 43. It controls river flows into the westerly extension of Cole Slough toward the Laton area.

Last Chance Weir

On the main Kings River next to the Kings Country Club near Laton, Last Chance Weir pools water for diversion into the Last Chance Water Ditch Company's canal that since 1874 has served portions of Kings County. For several miles below Last Chance Weir, the Kings River serves as the boundary between Kings and Fresno counties.

Reynolds Weir

Spanning the end of Cole Slough on the eastern edge of Laton, Reynolds Weir controls diversions into the Laguna Irrigation District's Grant Canal and A Canal, as well as Murphy Slough and Liberty Canal that supply the Riverdale Irrigation District, Reed Ditch Company and Liberty Mill Race Company (all of which are members of the Murphy Slough Association), the Burrel Ditch Company and Liberty Canal Company. Lands watered by these various canals stretch from Laton to south, west and northwest of Riverdale in parts of Fresno and Kings counties. Water may also flow from Reynolds Weir back into the main Kings River below Last Chance Weir through a short channel, Reynolds Cut, on Laton's eastern edge.

Recreation

Kings River swimming, tubing and canoeing are popular summertime activities in northern Kings County, although the cold and often swift water is deceptively dangerous. Some boating and jet-skiing also takes place when water levels are high. Near Laton, the Laton-Kingston Regional Park offers beaches, play areas and picnicking.

Kingston

Located on the left (south) bank one half mile below Laton, now-vanished Kingston was an important early-day river town.

Originally known as Whitmore's Ferry, Kingston took its name about 1858 when the site became the first point on the Kings River to be bridged. A few years later, Kingston became a Butterfield Stage station. The town declined rapidly in the 1870s and ultimately became a ghost town. Kings County's portion of the Laton-Kingston Regional Park now marks the site, a registered state historical landmark.

The Laguna Grant

Stretching 26 miles along the original Kings River channel's right bank (below the modern site of Kingsburg) was Rancho Laguna de Tache, a 48,800-acre Mexican land grant. The grant was made in 1846 to Manuel Castro by Don Pio Pico, last Mexican governor of California. The Laguna Grant's ownership was incredibly complicated.

However, the ranch played a pivotal role in the eventual settlement of Kings River water rights and entitlements through its 1892 purchase by the Fresno Canal and Irrigation Company. By that acquisition, the Fresno company secured and gained control of the Grant's riparian claims to Kings River water. In 1897, the manager of the Fresno

canal system and the Laguna ranch, L.A. Nares, negotiated the first partial Kings River water entitlement schedules. Although incomplete, those efforts set the stage for broader negotiations that ultimately led to agreements resolving Kings River water rights and entitlement issues.

Lemoore Weir

Three miles downstream from Laton is Lemoore Weir. There, one of the region's oldest and largest canal systems was constructed by the Lower Kings River Water Ditch Company in the early 1870s. That system has been operated since 1902 by the Lemoore Canal and Irrigation Company and serves much of the Lemoore area in Kings County. The Lemoore headgate is also the primary point of diversion for the John Heinlen Mutual Water Company, which serves a smaller area north and northwest of Lemoore but is also among the Kings River's earliest diverters.

River Below Lemoore Weir

Two miles below Lemoore Weir, the river changes direction, curving from west to south. At the Excelsior Avenue bridge, the river flows fully back into Kings County before it curves toward the west to Army and Island weirs. The Corps of Engineers lists the channel's capacity between Laton and Army Weir as 9,100 cubic feet per second.

Boating and a variety of other water recreation take place each year along the Kings River, particularly between Reedley and Kingsburg.

KRCD Channel Maintenance

Protecting what has historically been flood country is the Kings River Conservation District. Its Riverdale-based flood maintenance staff maintains the primary channels and levees to ensure that the river's flood-carrying capabilities are maximized. KRCD's flood management work is conducted under a 1959 agreement with the Corps of Engineers. That federal agency in 1936 was given overall responsibility by Congress for the nation's flood control.

Although KRCD is occasionally involved with channel work in other areas, its primary zone of responsibility begins on Cole Slough near Eighth Avenue in northeastern Kings County (southwest of Kingsburg) and continues down the Kings River to Empire No. 2 Weir near Stratford on the South Fork and to McMullen Grade (State Route 145) on the North Fork-James Bypass. Other channels maintained for flood operations by KRCD include all or parts of Dutch John Cut, Clark's Fork, South Fork, the Crescent Bypass, North Fork, and Fresno Slough. During periods of high water, KRCD provides round-the-clock levee patrols as needed to guard against flooding.

Rafting down the river below Pine Flat Dam is an educational, and fun, experience for these Sanger High School students.

Clark's Fork, South Fork and Tulare Lake

Army Weir

The Kings River is unique that in its lower reaches it divides. This separation occurs in Kings County, 1½ miles upstream from State Route 41. Controlling the southerly channel into the Tulare Lake bed region – known in different stretches as

Empire No. 1 Weir serves the Empire West Side and Stratford Irrigation districts.

Clark's Fork and the South Fork – is Army Weir. It was constructed between 1943-45 for flood control purposes by the Corps of Engineers. A distinctive structure, Army Weir along with nearby Island Weir on the diverging North Fork team up to create a key Kings River water management location. Located between Army and Island weirs is the headgate of Laguna Irrigation District's Island Canal.

Clark's Fork

Clark's Fork leads from Army Weir southwesterly toward the Tulare Lake bed. A short portion of its channel downstream from the divide was developed at the time Army Weir was constructed to connect with an older, natural channel. It soon came to have a natural riparian look and environment after replacing and consolidating flows of other, smaller, unregulated streams and sloughs. Clark's Fork extends to reaches further downstream known as the South Fork. West of State Route 41 are twenty-three individual pumping facilities that serve users in Clark's Fork Reclamation District No. 2069, a KRWA member unit. Other KRWA member units taking delivery of Kings River water nearby are the Upper San Jose Water Company and John Heinlen Mutual Water Company.

South Fork

A small channel along the Clark's Fork Reclamation District's eastern and southern boundary is the upper section of the river's South Fork where there are seven individual pumping installations. One-half mile south of the Hanford-Armona Road, this upper South Fork section combines with Clark's Fork. From that point on downstream, it is known as the South Fork. The Corps of Engineers lists the South Fork's capacity as 3,100 cubic feet per second below the alignment of the Hanford-Armona Road.

Empire Weir No. 1

Located west of Lemoore (and south of State Route 198), Empire No. 1 Weir forms a large pool for diversions into the Stratford, Westlake and Empire Westside canals, all of which were developed between the late 1890s and 1915. The No. 1 Pool is sufficiently sizeable to be useful to the KRWA Watermaster's staff in re-regulating flows before making deliveries to units that divert water at the two Empire weirs.

River Below Empire Weir No. 1

For 4½ miles below Empire No. 1 Weir, the South Fork meanders in a predominantly southerly direction. There are no KRWA points of diversion in this reach. High groundwater insures that the channel is generally pooled.

Empire Weir No. 2

A mile southwest of Stratford (immediately below State Route 41), Kings River water reaches the Tulare Lake bed. Empire No. 2 Weir pools water for diversion into the Tulare Lake, Kings River-South Fork and Blakeley canals. One of two Tulare Lake Basin Water Storage District laterals from the California Aqueduct makes State Water Project deliveries immediately below the weir. Lateral A also makes State Water Project deliveries to the Empire West Side Irrigation District and Kings County. The Stratford Irrigation District's Crabtree Ditch begins at Empire Weir No. 2, which marks the South Fork terminus of KRWA authority and KRCD channel and levee maintenance.

Recreation

Because pools formed by the two Empire weirs hold some water at nearly all times, they support warm water fisheries. Each is popular with anglers. Water skiers occasionally make use of the large Empire No. 1 pool.

The Kings River reaches its figurative end (above) channeled as a canal in the deepest point of the old Tulare Lake bed as it reaches an intersection with the Tule River Canal from the east.

Tulare Lake Bed

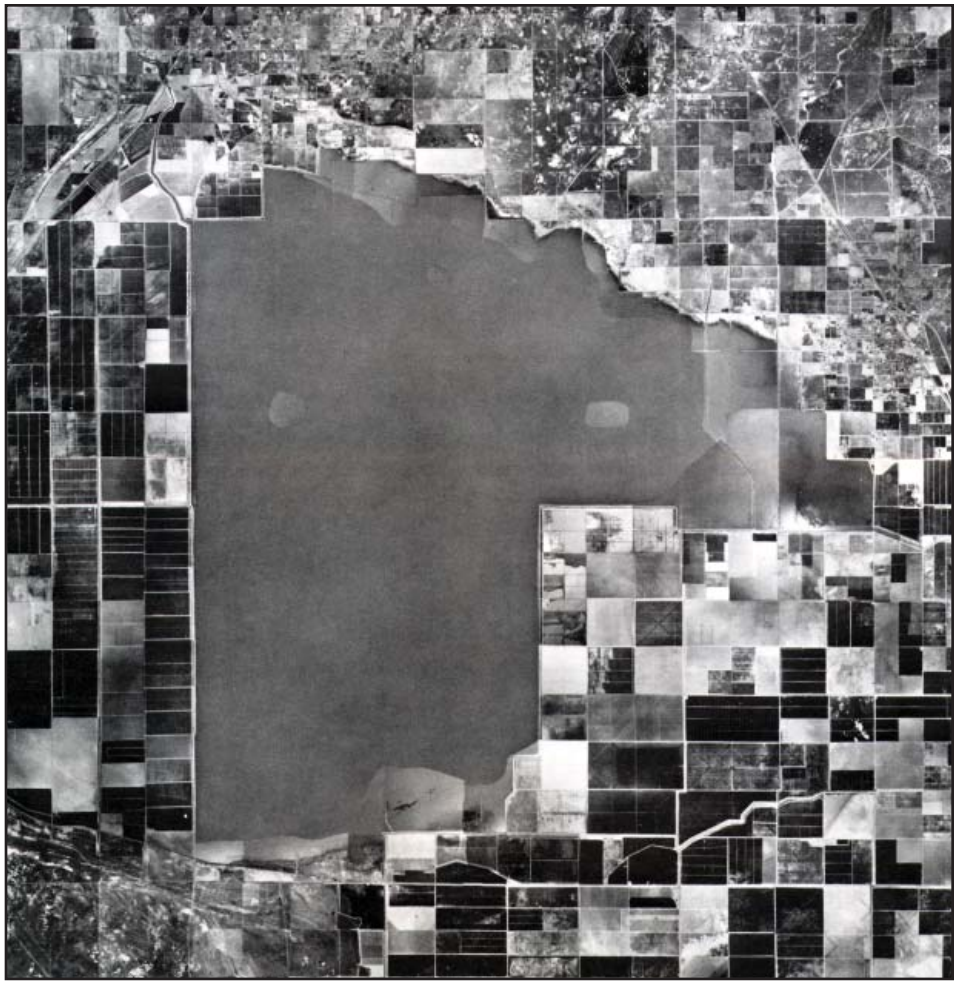
The South Fork terminates in a truly unique area, the Tulare Lake bed. An alluvial fan formed over time by sediment deposited by the Kings River from the east and Arroyo Pasajero from the west historically blocked the flows of several southern Sierra streams (including most Kings River flows) from flowing northwesterly through the valley's trough to the San Joaquin River. At now-vanished Summit Lake southwest of Riverdale, this natural dam's "spillway" into Fresno Slough stands at 207 feet above sea level. Formed by this barrier was Tulare Lake, at one time the West's largest expanse of fresh water, covering up to 1,000 square miles. Tulare Lake covered much of what is now southern Kings County. Following the floods of 1861-62 and 1867-68, Tulare Lake's greatest observed highwater mark – 216 feet above sea level – was attained.

Receding Lake

Upstream irrigation diversions from all streams tributary to Tulare Lake caused the lake to begin diminishing in the 1870s, although it filled and spilled through Summit Lake for what proved to be the final time in 1878. Accelerating settlement and irrigation demands along the valley's East Side during the 1880s and early 1890s led the natural lake to become totally dry for the first time in 1898. That soon prompted cultivation of the lakebed's rich soils for farming and organization of reclamation districts to create channels and flood control levees. The lake reappeared during wet years but completely dried in many subsequent years. Farming quickly returned each time the lake receded.

Lakebed's Closed Basin

Despite flood control projects developed on the Kings, Kaweah, Tule and Kern rivers between 1949-62, the Tulare Lake bed's lack of natural outfall dictates that all flood water entering Tulare Lake from those rivers and smaller uncontrolled streams must remain until consumed by evaporation or irrigation of unflooded basin fields. Kings River water rights permit some KRWA member units to store water in Tulare Lake. Exceptionally heavy soils known as Corcoran clay preclude any significant percolation.



Tulare Lake, as it reappeared during the flood of 1969.

Flood Vulnerability

The area, served by the Tulare Lake Basin Water Storage District and other public districts and mutual water companies that are all KRWA member units, remains highly vulnerable to occasional flooding and drought-caused water supply shortages.

The result, economically and physically, is that the Tulare Lake bed at an early date came to be farmed in very large tracts upon which annual field crops are produced. Small farmers could not possibly endure the periodic flooding threats and financial burdens of Tulare Lake bed agricultural operations even though the remaining 80 percent of the Kings River service area is dominated by small- to medium-sized units with a diversity of permanent and field crops.

Kings River-South Fork Canal

Below Empire No. 2 Weir, the Kings River-South Fork Canal flows another ten miles into the Tulare Lake bed's bottom as a South Fork extension. After meandering for a few miles, the canal is channeled directly south to the lowest point in the Tulare Lake bed. There, it intersects the Tule River Canal, flowing from the east, in the basin's low point at an elevation of 179 feet above sea level, twelve miles west of Corcoran.

Island Weir, upstream from State Route 41 (north of Lemoore), marks the North Fork's beginning.

North Fork and James Bypass

Altered Channels

Although many of the lower Kings River's flow patterns have changed significantly from natural conditions found by the region's earliest settlers in the 1860s, no reach of the river has been so thoroughly transformed as the North Fork-James Bypass channel that today conveys Kings River flood release flows to the San Joaquin River. These complex transitions began with the original North Fork, a far shorter and much smaller channel than the present North Fork. The earlier North Fork diverged from the river immediately downstream from modern Excelsior Avenue on the right (west) bank. It flowed west and northwest for only a few miles and apparently was used for distributing irrigation or stock grazing water before being closed in 1865.

Evolution of North Fork

Under natural conditions that existed prior to the area's original irrigated agricultural development, only very limited amounts of Kings River water typically reached across the river's extensive delta to the trough of the valley and Fresno Slough and generally only during times of high water.

That was destined to change. In 1872, a new ditch was opened that became known as the Zalda Canal. Floods in 1879 and 1884 substantially enlarged the canal for about four miles, enabling connections to be made with other channels. Starting in 1909, other changes occurred. The Zalda Reclamation District dredged a two-mile-long channel and constructed levees, from upstream of today's 22nd Avenue to the Laguna de Tache Grant's western boundary, where Crescent Weir is located today, south of Riverdale. The head of another nearby stream, Beall Slough, was closed in 1910.

In 1914-15 Zalda Reclamation District No 801, Stinson–Burrel Reclamation District 1605 and Crescent Reclamation District constructed levees on both sides of what is now known as the North Fork. L. A. Nares, who then managed the Laguna de Tache Grant, Laguna Lands Ltd. and Fresno Canal and Irrigation Company, was responsible for most of this construction.

Island Weir

The North Fork's flows are controlled by Island Weir, a few hundred feet from Army Weir, upstream from State Route 41. Along with making irrigation deliveries, the North Fork for many decades has served as the Corps of Engineers' primary means of disposing of Pine Flat Dam flood releases. Under typical flood operations, the first 4,750 cubic feet per second of flood release water is directed by the Corps of Engineers through the North Fork-James Bypass channel to the San Joaquin River and, ultimately, San Francisco Bay.

North Fork Below Island Weir

The North Fork flows directly west from Island Weir along the route of the early-day Zalda Canal. The larger channel, opened by flood events and levee construction, soon came to have natural riparian characteristics and gradually absorbed the river's lower and mid-level flows. Despite having had various names in the past, the channel is now known exclusively as the Kings River's North Fork as far downstream as

McMullen Grade, State Route 145. For the five miles below Island Weir, there are no KRWA points of diversion. The Corps of Engineers lists the channel capacity through this reach at 6,300 cubic feet per second.

Crescent Weir and Flood Flows

A few miles southwest of Riverdale and four miles below State Route 41 is Crescent Weir where North Fork flood release flows are typically measured and confirmed. Beginning at Crescent Weir are the Crescent Canal Company's ditch and Laguna Irrigation District's Summit Lake Ditch. In all reaches below Crescent Weir, the main channel's capacity is listed by the Corps of Engineers as 4,750 cubic feet per sceond. The first 4,750 cubic feet per second of Pine Flat Dam's flood release (or whatever flow is deemed proper by the Corps) is conveyed to the San Joaquin River. When the Corps of Engineers determines that flood releases cannot be fully accommodated beyond Crescent Weir, the Corps of Engineers may order the balance of the flood release diverted into the Clark's Fork-South Fork system for disposal in the Tulare Lake bed.

Crescent Bypass

The Crescent Bypass also begins at Crescent Weir. This five-mile-long channel can be utilized under extreme flood conditions to move more water into the Tulare Lake bed by bypassing the smaller Clark's Fork. The Crescent Bypass has only rarely been used since its construction in the 1920s, even though its channel was improved by Kings River Conservation District as part of the Corps of Engineers plan for lower river flood control. In 1969 and 1997, the bypass transported flood water into the Tulare Lake bed. In 1983, it was briefly utilized by Tulare Lake interests as a key link in a unique pump-back operation devised to evacuate flood water from Tulare Lake into the San Joaquin River.

Summit Lake Country

South of Lanare in western Fresno County, the North Fork reaches the trough of the San Joaquin Valley and arcs northwesterly, crossing into Fresno County at Excelsior Avenue. This was originally a portion of the Summit Lake country. A region of tules and channels, this area connected Tulare Lake and the South Fork over the Kings River's alluvial fan through San Jose Slough, Summit Lake and other channels with Fresno Slough. That stream wound through what was known as the "Fresno Swamp" to the San Joaquin River. The area began to dry after Tulare Lake dropped below the "summit's" 207-foot elevation following the 1878 flood season. Agricultural development and reclamation followed and was complete by 1920. A few trees remain to mark the historic site of Summit Lake.

Stinson Weir

Three and a half miles northwest of Lanare on Fresno Slough is Stinson Weir, point of diversion for the Stinson Canal and Irrigation Company's canal. Under normal operating conditions, the Stinson Canal is KRWA's last North Fork system point of diversion (although other historic points of diversion still exist downstream).

James Bypass

East of Helm, the primary North Fork channel retains its flow-carrying characteristics but again changes names at State Route 145 (McMullen Grade), where the Kings River Conservation District's levee and channel maintenance ends. From there to Mendota Pool, the 12-mile-long James Bypass is channeled through a man-made course, part of a flood control project developed between 1913-15. Downstream from Stinson Weir, the main channel carries water only during flood release operations or exceptionally high unregulated natural discharges from Mill and Hughes creeks.

Old Fresno Slough

The small original (and natural) Fresno Slough channel meanders for several miles, from southeast of San Joaquin to north of Tranquillity, a few miles west of James Bypass. Historically, there was no defined channel through the first reaches of the "Fresno Swamp" country downstream from Summit Lake. That changed when pioneer rancher Jefferson James constructed a 6-mile-long drain from the swamp to Fresno Slough before 1898. The downstream reaches often contained San Joaquin River backwater and some Kings River water conveyed across the valley through Murphy Slough. Fresno Slough is no longer a part of Kings River operations.

A portion of the old slough is now managed as a wetlands area by the California Department of Fish and Game. It only receives water by way of Mendota Pool. Tranquillity Irrigation District has two pump installations within the slough.

James-Tranquillity Agreement

Since 1963, the two most northwesterly KRWA units, the James and Tranquillity irrigation districts, have had agreements with fellow Lower Kings River units that have resulted in water being imported into the Kings River service area on a regular basis. The two districts originally leased their average annual Kings River entitlements to other lower Kings River units at a price equal to that paid by James and Tranquillity to purchase a like amount of Central Valley Project water delivered at Mendota Pool through the Delta-Mendota Canal under a U.S. Bureau of Reclamation contract.

In 2003, as James and Tranquillity entered into CVP renewal contracts, the districts and all other KRWA members enacted a new 12-year agreement between the James and Tranquillity irrigation districts, and other lower Kings River units. This

Kings River flood release water is measured at the James Bypass gaging station near San Joaquin, just before entering Mendota Pool and the San Joaquin River.

agreement continues the practice of permitting the other twenty-two Lower Kings River units to store, divert and use water that by right belongs to James and Tranquillity but reflects greatly increased costs of CVP water. As a result, James and Tranquillity still can afford to purchase increasingly more expensive but nearly always more dependable CVP water that is delivered through the Delta-Mendota Canal to Mendota Pool, and are permitted to continue diverting and beneficially using Kings River floodwater.

The agreement makes available up to 26,600 acre-feet of James and Tranquillity entitlement in any one year for use by other Lower Kings River units. James and Tranquillity benefit by avoiding enormous Kings River channel losses in exchange for water deliveries from Mendota Pool.

James Weir

Located just below McMullen Grade, James Weir is a diversion point for the James Irrigation District. Except for infrequent diversions from Kings River flood releases, this diversion point has not been used since the late 1950s.

James Bypass Flood Management

Flood management, and levee and channel maintenance along the James Bypass between State Route 145 and Mendota Pool is provided by Reclamation District 1606. That district, which also delivers a small amount of Central Valley Project water, is managed by the James Irrigation District.

James Bypass Gaging Station

Located on James Bypass immediately below the Placer Avenue bridge east of Tranquillity, this gaging station is operated by the U.S. Bureau of Reclamation to measure Kings River system flows into the San Joaquin River.

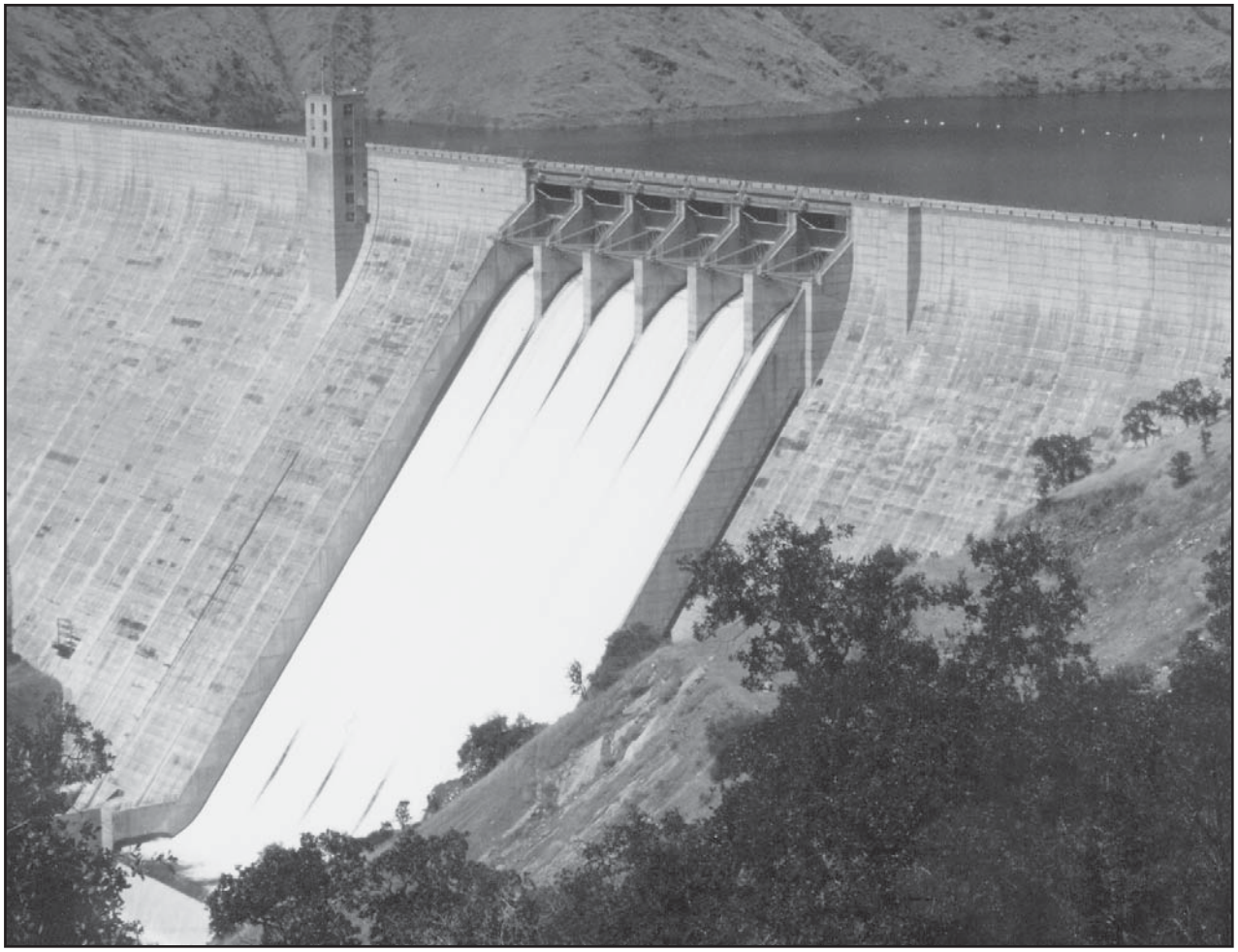
Mendota Pool

The Kings River's North Fork system ends at its confluence with the San Joaquin River in Mendota Pool, a shallow lake formed by a small dam, one mile northeast of Mendota and thirty-five miles west of Fresno. Central Valley Project exchange deliveries of north state water are made into Mendota Pool through the Delta-Mendota Canal. The lowest reaches of Fresno Slough are inundated by Mendota Pool, beginning not far below the confluence of the James Bypass and Fresno Slough, north of Tranquillity, within the Mendota Wildlife Area.

San Joaquin River

The San Joaquin River near Mendota Dam is the northerly terminus of the Kings River's North Fork system. The San Joaquin bears Kings River flood flows from Mendota Pool up the valley's west side to San Francisco Bay and the Pacific Ocean. At no other time does Kings River water reach the San Joaquin River. Historically, the Kings was not a San Joaquin River tributary.

Kings River Water Users



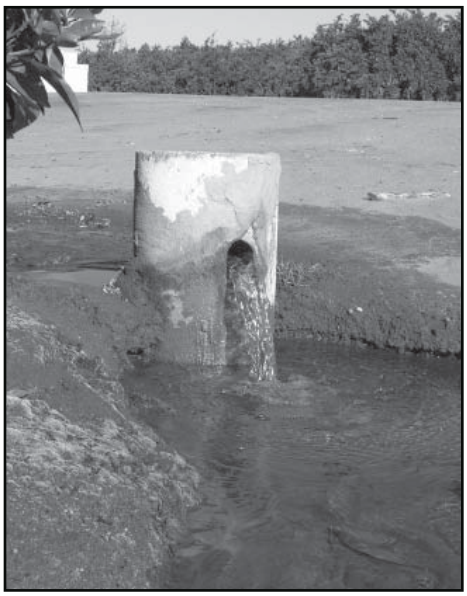
For those who live and work within its one million acre service area, there is no more precious resource than the Kings River. The Kings supports important fisheries, recreational opportunities and pleasing aesthetic values. But the river means so much more in a land of little rain. The Kings is the source of most water used in homes, businesses and industries and on farms within the Kings River service area. The river is the means by which the Sierra Nevada's annual snowpack is beneficially used every day by hundreds of thousands of people to sustain and improve their lives. Truly, the Kings River is the life's blood of our region's economy.

Agricultural Water Users

The more than one million acres within the Kings River service area contribute mightily to one of the world's most incredibly fertile farming regions. Kings River water makes it possible. Water from the river is used for farm irrigation that ultimately benefits consumers with high-quality farm products.

Top Value

Sustained largely by Kings River water, Fresno County for decades has been the nation's leading county in gross agricultural receipts (with the exception of 2001 when the honor went to Tulare County, some of which relies upon Kings River water). Values of crops grown in Kings County are also among the highest in the nation. Well over 300 crops are grown commercially within the Kings River service area, thriving under a combination of fertile soil, favorable hot and dry summer weather, and a stable water supply. Gross agricultural revenues well in excess of $3 billion are generated annually within the Kings River service area.



All the facilities and effort needed to store and convey Kings River water lead to delivery for on-farm irrigation.

Farms Relying Upon Water

There are approximately 15,000 farms within the Kings River service area. The vast majority are modest family farming operations although farm sizes increase significantly in the service area's southern and western areas. Each farm relies upon the Kings River for a surface water supply or for replenishment of the groundwater reservoir which supplies farm wells. Rainfall is sufficient to only provide a minor portion of crop water demands. The few farms not relying upon irrigation are limited to dry-land grain production.

The Importance of Agriculture

Farming operations made possible by the Kings River and other Sierra rivers and streams contribute enormously to the San Joaquin Valley's economy. Agriculture generates much of the Central Valley's employment and nearly a third of Central Valley personal income. Each dollar earned in agriculture stimulates other economic activity and in the process generates tax revenue for federal, state and local agencies. In many rural Kings River service area communities, irrigated agriculture and its support industries are essentially the entire local economy.

Urban Water Agencies

A rapidly growing population of approximately a million people lives within the Kings River service area. Nearly three dozen cities, towns and villages depend upon groundwater conjunctively used and obtained from Kings River surface supplies to meet their municipal and industrial water needs.

City of Fresno

Fresno, the region's largest city, has swiftly grown to embrace thousands of acres of former agricultural land. Water that in past years would have flowed through the Fresno Irrigation District's canal system to irrigate what was then farmland now is delivered by FID to percolation basins, such as the city's Leaky Acres near the Fresno-Yosemite International Airport, or recharges the aquifer during summer months in Fresno Metropolitan Flood Control District storm drainage basins. This helps supply the city's water. Fresno also has under contract 60,000 acre-feet of Class 1 Central Valley Project water from the CVP's Friant Division. The city in 2004 completed a $31.5 million surface water treatment plant near Chestnut and International avenues that can daily clean and provide 90 acre-feet of water from the Kings and San Joaquin rivers. That helps relieve the overdrafted aquifer that underlies Fresno.

City of Clovis

Rapidly growing Clovis opened its first surface water treatment plant in 2004 to deliver municipal and industrial water from the Kings River to homes and businesses located within both the city and Fresno Irrigation District (FID). The Clovis and Fresno treatment plants represent the first direct deliveries of surface water for domestic use within the Kings River service area. Clovis and FID are also partners in a unique water banking program. FID has developed the Waldron Banking Facility, new percolation basins and retrieval pumps at sites between Kerman and Biola, that enable the district to bank water for the city. Since Clovis is upstream of the new "bank," it receives stored water through an exchange, from FID's Enterprise Canal. FID pumps an equal amount from the new water bank for surface delivery to Kerman area farmers. The project cost to each agency was approximately $4.6 million. The project annually yields some 10,000 acre feet of "new" water for the area.

Other Cities

Depending fully upon groundwater supplied by the Kings River and its canal systems are Sanger, Reedley, Parlier, Kingsburg, Selma, Fowler and Kerman in Fresno

County; Hanford, Lemoore and Corcoran in Kings County; and Dinuba in Tulare County. Wells are the sole source in each of those cities and more than two dozen other unincorporated towns.

Water for the Fishery

Caring for Fish and Wildlife

Helping care for the Kings River's fishery is a responsibility and trust that the Kings River Conservation District and Kings River Water Association accepted long ago and have pursued ever since. Today, this important environmental obligation has grown into a variety of improvement projects, scientific studies and monitoring. These activities are taking place largely under a model and entirely voluntary, cooperative and consensus-based effort — the Kings River Fisheries Management Program.

Background

KRWA became involved in river fishery issues in the 1950s, following completion of Pine Flat Dam. The KRWA, its member units and the California Department of Fish and Game (CDFG) recognized that the new barrier affected the river's habitat below the dam.

On September 11, 1964, KRWA and the CDFG entered into a comprehensive fish and game accord. The agencies agreed to preserve, protect, maintain and enhance fish and wildlife resources then existing in and adjacent to the river below Pine Flat. KRWA's units voluntarily agreed to provide a minimum flow of 50 cubic feet per second at the head of the Centerville Bottoms. For the next thirty-five years, this agreement governed operations during periods in which there were no irrigation release demands from units or flood release operations by the Corps of Engineers.

In 1991, a public trust complaint was filed by a number of anglers and others interested in the river. It alleged the Pine Flat Project's operation had harmed the "public trust" in connection with the reservoir habitat and that within the river below the dam. A number of "remedies" were proposed, including establishment of a large minimum pool in Pine Flat Reservoir and much greater minimum river releases. Kings River interests responded by reaching out to anglers and the CDFG in search of ways to create genuine habitat improvements without harming water users.

Boulders by the thousands have been placed in the channel for enhanced habitat under the Kings River Fisheries Management Program.

KRCD, supported by KRWA, had already undertaken many environmental studies and programs. Those were accelerated during the 1990s. During that same period, the CDFG commissioned and conducted studies of its own. In 1993, the Corps of Engineers launched fish and wildlife studies directed at mitigating effects created by development of Pine Flat Dam and Reservoir. Congress directed that the Corps examine a variety of potential projects but that no action could interfere with water rights, storage rights or operations.

In 1993-94, a Corps of Engineers reconnaissance study identified possible projects for a full feasibility study. KRCD agreed in 1995 to serve as local cost-sharing sponsor. KRWA agreed to pay half the local share. In 2001, the Corps determined there would be a federal interest in a multi-level intake structure on Pine Flat Dam's upstream face to control the temperature of water being released to the river through penstocks that supply KRCD's Jeff L. Taylor-Pine Flat Power Plant. A second project was proposed to improve habitat along a river reach near Byrd Slough, a few miles northeast of Centerville.

Turbine Bypass

Another Corps of Engineers temperature control project sponsored locally by KRCD (with backing by the KRWA) was a turbine bypass system, constructed between 2000-03. This project, at the base of Pine Flat Dam, was identified during the earlier Corps study. Its development was hurried as a "project modification" by the Corps in order to get its benefits in place and in use as quickly as possible. The turbine bypass permits water to be released through the penstocks, for fishery temperature control purposes, at times when KRCD's Pine Flat Power Plant is not in operation. Such temperature management flexibility is a great benefit to the downstream fishery at times of low flows. The project cost approximately $6 million. The turbine

With the Kings River flowing as a backdrop, the Kings River Fisheries Management Program's renewal agreement is signed on June 26, 2009, by (from left) California Department of Fish and Game Regional Manager Jeff Single, Kings River Water Association Chairman Norman Waldner and Kings River Conservation District President Mark McKean.

bypass' effectiveness has led KRCD and KRWA to conclude that the Corps' costly multi-level intake structure proposal was not necessary for river temperature management.

Kings River Fisheries Management Program

While the Corps studies were progressing, environmental work and negotiations on long-term solutions were pursued by KRWA, KRCD and the CDFG. Progress on these efforts bore fruit. Agreements were approved establishing the Kings River Fisheries Management Program. This novel partnership was voluntarily and cooperatively formed by the KRCD, KRWA and CDFG. Necessary agreements, which also included operational changes in upstream reservoirs owned by Pacific Gas and Electric Company, were signed May 28, 1999. Within the KRWA, the 28 member units agreed unanimously on terms of a program-implementation agreement.

The program, renewed in 2009, included many important aspects. Among the most visible were doubled minimum release requirements, to nearly 100 c.f.s. at Fresno Weir, nine miles downstream from the dam, and limited flows into the lower river over Fresno Weir. Another involved establishment of a 100,000 acre-foot Pine Flat Reservoir temperature control pool. KRWA and KRCD contributed annual funding guarantees totaling $100,000 that CDFG agreed to attempt to match within the state budget process. KRCD, KRWA and the CDFG have also contributed large amounts of staff time, and many community volunteers have been generous with this assistance. Physical improvements, program monitoring, increased stream gaging and additional fish planting and angling enforcement are also part of the program. The 1964 agreement between the CDFG and KRWA was replaced.

Definition and Goals

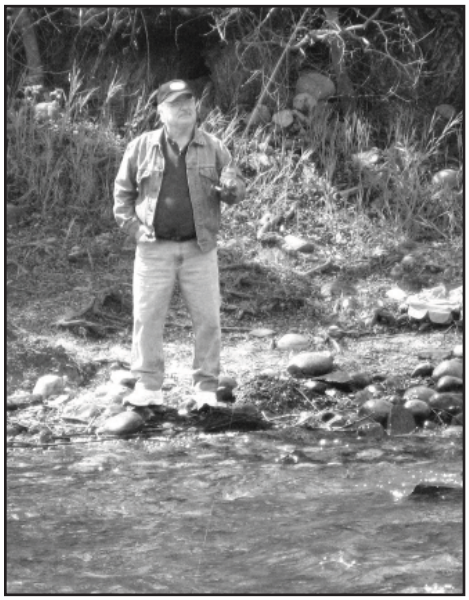
The Framework Agreement defined the Kings River Fisheries Management Program as "an enhancement program that will, among other benefits, extend trout habitat suitability throughout the year in most years, and for longer periods in every year than existed historically." The program included many multi-species aquatic resource goals but recognized and protected historic water rights and beneficial uses. Along with an Executive Policy Committee and Technical Steering Committee composed of representatives from each sponsoring agency, the program was soon relying heavily on strong public involvement through its Public Advisory Group. KRWA, KRCD, the CDFG and the public are working together, putting the program to work in what has been applauded as a major achievement.

Voluntary Water Dedication

Critical to the program's success was agreement by KRWA member units to voluntarily make available some 12 percent of their storage rights. That provides water for the temperature control pool as well as specified amounts of water Pacific Gas and Electric Company is entitled to hold upstream in Lake Wishon and Courtright Lake under certain circumstances.

Thorburn Spawning Channel

KRCD took the lead in developing the Fisheries Management Program's first project, the Thorburn Spawning Channel. An existing but overgrown side channel was modified to include a headgate as well as



An angler enjoys a day on the Kings River as he tries his luck a short distance downstream from Pine Flat Dam.

A drilling rig at work in the James Irrigation District in western Fresno County.

restoration of oak woodland and riparian environment. Gravel, rock and other natural debris were placed within the channel to create habitat and hiding places for juvenile fish. Initial project development was completed in 2000.

Other Fishery Flows

The Kings River sustains important fisheries and wildlife resources which are managed by the California Department of Fish and Game. In the mountains, fishery needs in the mainstem Kings River above Pine Flat Reservoir largely depend upon the river's natural flow. The North Fork fishery above Pine Flat Reservoir is maintained with releases from Pacific Gas and Electric Company reservoirs. Pine Flat Reservoir water storage has historically supported an excellent fishery of warm water species such as bass and cold water fish that include trout. In most months, fishery water needs below Pine Flat Dam are met through releases made on behalf of KRWA units. These flows, particularly during the hot summer months, are often greater in volume and colder in temperature than would have been possible under pre-project conditions.

Groundwater

The Aquifer

The Kings River service area overlies the Kings Groundwater Basin, a critically important common resource shared by all of the overlying water users to meet agricultural, municipal and domestic water demands by conjunctively using a combination of surface water and groundwater to meet overall water needs. Surface water is not available at all times and places to meet every demand for water. Heavy groundwater pumping results. More often than not, pumping results in an "overdraft" situation in which, on average, more water is removed from the aquifer than is replaced. Urban growth is further stressing this imbalance, which the California Department of Water Resources has termed "critical," despite a number of highly effective and successful groundwater recharge operations that have long been in existence.

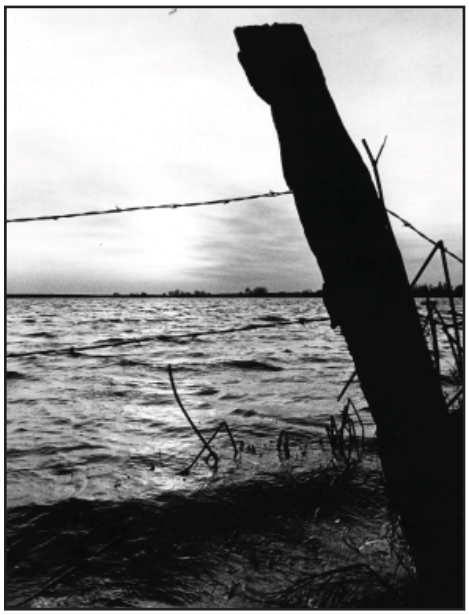
Areas Lacking Groundwater

Little or no groundwater is available within two separate areas within the Kings River service area. Those include a few portions of the Alta Irrigation District near the Sierra Nevada foothills. A larger region with virtually no usable groundwater (because of a nearly impenetrable layer of Corcoran clay) is within the Tulare Lake bed.

How Groundwater is Supplied

Groundwater resources are naturally supplied by the region's aquifer, seepage from the Kings River's sandy channel and by irrigation water which percolates through unlined canals or which is not consumed by plants. Any surface irrigation water not consumptively used by plants goes into the aquifer and is ultimately reused.

Groundwater recharge is also greatly aided simply by not pumping, or through use of percolation ponds or water banking facilities. It has been estimated that 98 percent of river water that is not part of a flood release ends up being beneficially utilized through the conjunctive use of surface water and groundwater. Most portions of the Kings River service area depend upon conjunctive use to sustain crops at times and in places where surface water is not available.



Flood release water from the Kings River fills Consolidated Irrigation District's Rockwell Pond near Selma to help recharge the region's groundwater supply.

In Dry Years

Since the Kings River's runoff fluctuates widely, there are many years in which the surface water supply does not meet the area's water needs. Pumping is used by growers to meet dry-year irrigation requirements. Those "withdrawals" from the aquifer usually result in sharp groundwater table declines.

In Wet Years

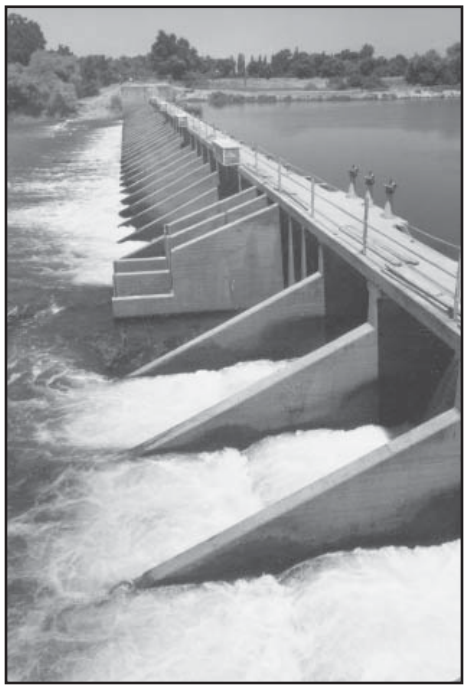
Increased supplies of available surface water for irrigation use decrease the need to pump and naturally recharge the groundwater reservoir. Several districts in the Kings River service area maintain ponding basins to allow flood-release water to be used for groundwater recharge purposes. More elaborate water banking and retrieval operations are also being developed. In wet years, because of this conjunctive use of surface and groundwater, the groundwater table often rises toward the surface, a positive result of aquifer "deposits".

The Downward Trend

Unfortunately, since "wet" years occur an average of only four years out of ten, the long-term trend is a groundwater table decline. During the severe 1987-92 drought, the average water table measurement within the KRCD dropped 34 feet, a reduction in groundwater storage of more than 3.8 million acre-feet, nearly four times the capacity of Pine Flat Reservoir.

Seeking Solutions

KRCD and KRWA are committed to easing or ending the region's groundwater overdraft and are searching for ways improve conditions, both in the short and long term. KRCD's staff is closely working with districts and companies that deliver water to Kings River users on a variety of studies, activities and projects. KRCD oversees three groundwater management areas. KRWA and its member units are also involved in studies aimed at better utilizing Kings River floodwater flows for improving groundwater conditions and the region's overall water supplies. The KRCD and KRWA remain fully engaged in state and regional discussions over future groundwater policy and law.



Peoples Weir, located a mile downstream from State Route 99, is the largest such structure on the Kings River. Water is diverted here into portions of Kings County.

Upper Kings Basin Water Forum

A major and broadly based cooperative effort that has emerged from the Kings River's search for positive water supply and environmental solutions is establishment of the Upper Kings Basin Water Forum. KRCD and KRWA have joined the California Department of Water Resources; the Fresno, Consolidated and Alta irrigation districts; many of the cities and counties in the Kings River service area; and many varied Kings River stakeholders in forming the Water Forum.

They have created an integrated regional water management plan for the extensive territory covered by the Forum. In the process, they have established the first significant Kings River area-wide water policy embraced by urban and agricultural water agencies as well as environmental interests, all working together. It is a process intended to plan for the future while reducing or avoiding conflicts related to water supply, groundwater management, ecosystem restoration and water quality.

Water Forum participants realize that water, land use, and environmental resource issues are interrelated and of regional scope, and that both local and regional solutions are required to ensure that responses to one issue do not create other problems or impacts. The Forum's vision is a sustainable supply of the Kings River Basin's finite surface and groundwater resources through regional planning that is balanced and beneficial for environmental stewardship, overall quality of life, a sustainable economy, and adequate resources for future generations. State bond funding has been awarded for the Water Forum's first projects, involving the Fresno Irrigation District, Kings County Water District and Alta Irrigation District.

Kings River Support Agencies

Four agencies are directly involved with managing or improving the Kings River and its resources. The Kings River Water Association and Kings River Conservation District each serve the river's entire service area but are separate organizations with completely different authorities, responsibilities and duties. The Corps of Engineers is in charge of Pine Flat Dam and the river's flood control and management. The California Department of Fish and Game oversees fishery matters.

Kings River Water Association

The Kings River Water Association is a private organization. The association was formed under the 1927 Kings River agreement by the river's water user organizations.

- **The Watermaster**: The Kings River Watermaster is in charge of administering the river, water entitlements, storage, releases and diversions.
- **Agreements Schedules and Storage**: Complex agreements and water schedules based on the river's mean daily natural (pre-project) flow at Piedra decide the water entitlement of each KRWA member on any given day. The Watermaster's staff converts each member unit's daily entitlement into shares of storage in Pine Flat Reservoir. Kings River Water Association members have contracted for 1,006,500 acre-feet of Pine Flat Reservoir storage space.
- **Releases and Diversions**: Except for flood releases (which are directed by the Corps of Engineers), the Watermaster's staff manages Pine Flat Dam water releases and deliveries to KRWA units' respective diversion points, accounting for any water-amount losses or gains in conveyance. Complete and continuous records are compiled and maintained for each diversion point.
- **Kings River Water Association Units**: KRWA's 28 member units include 13 public districts and 15 mutual water companies in portions of Fresno, Kings and Tulare counties.

A KRWA hydrographer records the river's flow reading at the gaging station located at the Peoples Weir.

Kings River Conservation District

The Kings River Conservation District is a public agency encompassing 1.2 million acres within portions of Fresno, Kings and Tulare counties. Formed in 1951, the Fresno-based District's territory embraces and, in some areas, extends beyond the Kings River service area. KRCD's mission is to provide flood protection, cooperate with other agencies to achieve a balanced and high quality water supply, provide on-farm support in efficient water use and develop power and natural resources, all for the public good. KRCD, a lead Kings River resource agency, embraces a vision that includes a sustainable groundwater resource, a reliable power supply, effective and efficient flood protection, and balanced managemetn and use of natural resources.

- **Environmental and Fisheries Projects**: KRCD continually conducts environmental studies and projects on behalf of all Kings River users and under terms of the KRCD's Federal Energy Regulatory Commission license. Those include monitoring of dissolved oxygen and temperature in the river and reservoir, fish population and creel surveying, fish and wildlife enhancement projects, and revegetation of riparian zones.
- **Flood Control:** KRCD in the 1950s assumed perpetual flood control responsibilities to protect vulnerable properties along the lower Kings River's channels, from southwest of Kingsburg to State Route 41 on the South Fork and State Route 145 (McMullen Grade) on the North Fork-James Bypass. Those duties include channel and levee system maintenance, and levee patrols at times of high water.
- **Water Management**: Improving on-farm water efficiency is the focus of KRCD's water management program. Its staff conducts surface and groundwater management studies, and works with individual growers and irrigation districts to make the most of the service area's water supply.
- **Water Quality**: KRCD has monitored Kings River water quality since 1978 but in recent years has taken on an expanded role in response to new Central California Regional Water Quality Control Board regulations. KRCD is a leader in the Southern San Joaquin Water Quality Coalition. KRCD, KRWA and several other agencies organized the Coalition in 2000 to jointly address a series of new questions, those involving water quality, that had abruptly emerged as the water industry's newest "big issues." Much of this effort has been directed to helping Kings River and other San Joaquin Valley growers comply with new conditional waiver

The Kings River Conservation District's Malaga Peaking Power Plant has been a big help in meeting the Fresno region's electrical energy needs since it went into service in 2005.

regulations for agricultural water discharges within the Tulare Lake Basin watershed, a unique hydrological region separate from the Sacramento-San Joaquin Delta. In 2008, KRCD and KRWA furthered the Agricultural Management Program by organizing a new Kings River subwatershed joint powers agency that helps represent growers and while providing water quality management information.

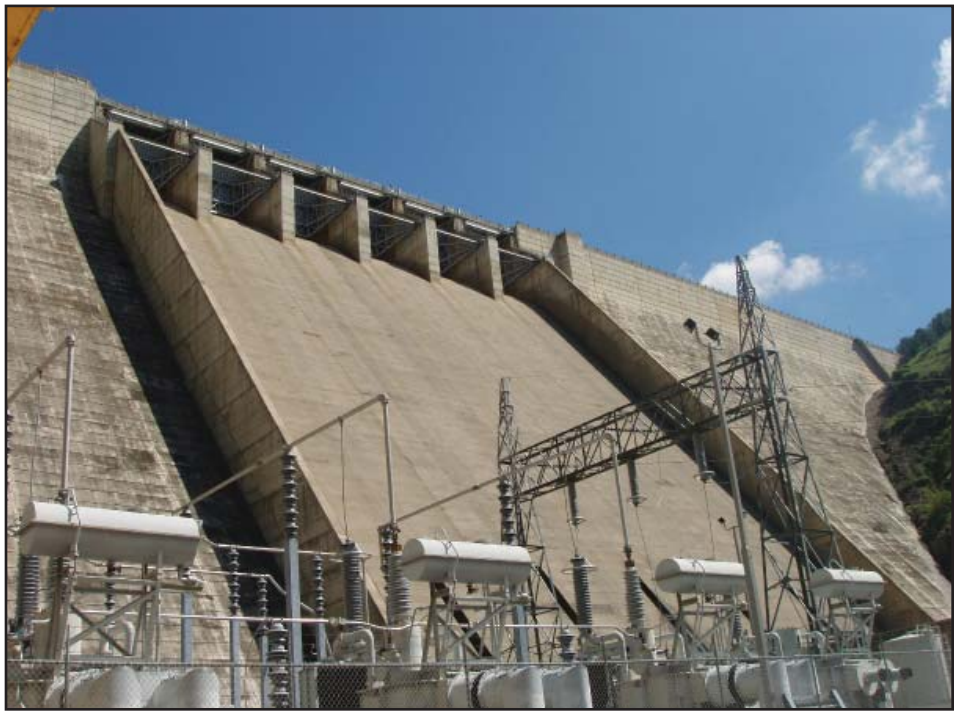
- **Hydroelectric Generation**: KRCD operates the Jeff L. Taylor-Pine Flat Power Plant, a 3-unit facility completed in 1984 at the base of Pine Flat Dam that operates only with water released to meet irrigation demand or flood control requirements. In the past, the KRCD has pursued or studied water storage and hydroelectric projects at other locations.
- **Peaking Power:** Late in 2002, KRCD and the California Department of Water Resources entered into a power purchase agreement for two small generating units designed to help meet the valley's peak energy demand. Completed in 2005, the Malaga Peaking Power Plant has an output of 90 megawatts, enough to serve some 90,000 homes. KRCD financed and constructed the plant on North Avenue, between Chestnut and Maple avenues in Malaga, and now oversees operations.
- **Weather Modification**: KRCD is the lead agency in one of the nation's oldest weather modification programs. It enhances precipitation over the Kings River watershed. KRWA, Pacific Gas and Electric Company and the California Department of Water Resources are cooperating agencies.

U.S. Army Corps of Engineers

The Corps of Engineers operates and maintains Pine Flat Dam and Reservoir, administers recreational facilities around the reservoir and is in charge of Kings River flood control, including decisions on flood releases from Pine Flat Dam. KRWA member units reimburse the Corps of Engineers 37.4 percent of all costs related to the Pine Flat Project's operation and maintenance (except recreation).

California Department of Fish and Game

The California Department of Fish and Game is in overall charge of managing the Kings River's fishery and enforcing state fish and game regulations. The CDFG is a partner, and has helped KRWA and KRCD fund, the Kings River Fisheries Management Program.



Pine Flat Dam stands over the switchyard at KRCD's Jeff L. Taylor-Pine Flat Power Plant.

KRWA Member Units

The Kings River Water Association's 28 member units, although united in their interests in issues and overall water conditions affecting the river, are highly individualistic. Their sizes vary greatly as do their local needs. Not only do the 13 public districts and 15 mutual water companies have unique characteristics, each unit enjoys Kings River water entitlements and Pine Flat Reservoir storage rights separate and distinct from those of all other units.

Upper River Agencies

Alta Irrigation District

The Alta Irrigation District, a public agency, is located east and south of the Kings River and was California's first public irrigation district (in 1888) to actually deliver water to its users. The district's Alta Canal transports water into a system that serves the area from Reedley to an area west of Orange Cove in eastern Fresno County, and the Dinuba, Orosi and Traver areas of northern Tulare County.

SERVICE AREA (acres) 129,300
PINE FLAT STORAGE SHARE (acre-feet) 100,000
UPSTREAM STORAGE SHARE (acre-feet) 19,275
DIVERSION POINT . . . South end of '76 Channel, at Frankwood Avenue

289 North L Street, P.O. Box 715, Dinuba 93618.
Telephone (559) 591-0800. Fax (559) 591-5190. Website: http://altaid.org

Fresno Irrigation District

A public agency formed in 1920 to acquire a predecessor canal company, the Fresno Irrigation District's territory encompasses much of the northern valley floor portion of Fresno County and embraces the cities of Fresno, Clovis, and Kerman. Other communities within the FID service area include Biola, Easton, and Malaga. The district's service area is the largest of any KRWA member unit. The Fresno entitlement under the Kings River water diversion schedules is the KRWA's largest. FID delivers municipal and industrial water to the metropolitan Fresno-Clovis area. Surface water used for agricultural irrigation is also a major groundwater recharge contributor. The district stretches from the base of the Sierra foothills to west and south of Kerman. FID's internal water distribution system is extensive and complex. FID also provides water (through the Fresno entitlement) to the Freewater County Water District near Centerville. FID is the only KRWA unit with a long-term contract (75,000 acre-feet of Class 2 water) from the Central Valley Project's Friant Division. The district also takes delivery of the City of Fresno's Class 1 Friant water, amounting to 60,000 acre-feet annually.

SERVICE AREA (acres) 235,000
PINE FLAT STORAGE SHARE (acre-feet) 119,000
UPSTREAM STORAGE SHARE (acre-feet) 22,937
DIVERSION POINTS.Gould Weir and Fresno Weir northwest of Centerville

2907 South Maple Avenue, Fresno 93725
Telephone (559) 233-7161. Fax 233-8227. Website: www.fresnoirrigation.com

Consolidated Irrigation District

Consolidated Irrigation District, a public agency established in 1921, serves a large portion of southeastern Fresno County and smaller areas in northwestern Tulare County and northeastern Kings County. Communities and their rural neighborhoods served by the district include Sanger, Del Rey, Parlier, Fowler, Selma, Kingsburg, Monmouth, Bowles and Caruthers. The district extends from northeast of Sanger to south of Kingsburg and west of Caruthers. Along with an extensive internal distribution system, Consolidated was a San Joaquin Valley pioneer in developing a system of groundwater recharge basins, storing water in the aquifer in wet years for use (by pumping) in dry years and by those lacking access to surface water supplies. Consolidated also administers the Lone Tree Channel, a separate water delivery system with what are known as Church rights. Those water rights are held by owners of about 8,000 acres within CID's boundaries and are historically linked to rights granted by Fresno irrigation pioneer Moses J. Church.

SERVICE AREA (acres) 144,000
PINE FLAT STORAGE SHARE (acre-feet) 120,000
UPSTREAM STORAGE SHARE (acre-feet) 23,130
DIVERSION POINT . . . . . .Fresno Weir

P.O. Box 209, Selma 93662
Telephone (559) 896-1660. Fax (559) 896-8488

Kings River Water District

A public agency, the Kings River Water District serves much of the Centerville Bottoms area northeast, east and southeast of Sanger. Its good water right (based upon the earliest Kings River diversions in the 1850s and 1860s) and small delivery system capacity combine to enable the district to deliver water for much of the year.

SERVICE AREA (acres) 15,400
PINE FLAT STORAGE SHARE (acre-feet) 15,000
UPSTREAM STORAGE SHARE (acre-feet) 2,908
DIVERSION POINTS 17

15142 East Goodfellow Avenue, Sanger 93657.
Telephone (559) 875-7721. Fax (559) 875-2990

Lower River Agencies
State Route 99 to Army and Island Weirs

Peoples Ditch Company

A mutual water company, the Peoples Ditch Company provides water service over an extensive portion of northeastern Kings County (including the Hanford area) as well as making deliveries to stockholders in the Tulare Lake bed. Peoples, organized in 1873, is among the companies that signed the original 1897 water schedule and gained entitlement from the Kings River's low flows. The company operates Peoples Weir, the river's largest such structure, three-quarters of a mile below State Route 99 and just south of Kingsburg. In wet years, surplus water delivered through the Peoples Ditch is ponded in the Kings County Water District's extensive system of groundwater recharge basins and channels.

SERVICE AREA (acres) . . . . . .No Designated Service Area
PINE FLAT STORAGE SHARE (acre-feet) 107,000
UPSTREAM STORAGE SHARE (acre-feet) 20,624
DIVERSION POINT . . . . . .Peoples Weir, south of Kingsburg

P.O. Box 1261, Hanford 93232
Telephone (559) 584-2341. (559) 585-0480

Corcoran Irrigation Company

A mutual water company, the Corcoran Irrigation Company serves the Corcoran area of eastern Kings County with water transported 25 miles through the Lakelands Canal system from Peoples Weir, south of Kingsburg.

SERVICE AREA (acres) . . . . . No Designated Service Area
PINE FLAT STORAGE SHARE (acre-feet) 30,000
UPSTREAM STORAGE SHARE (acre-feet) 5,782
DIVERSION POINT . . . . . Peoples Weir, south of Kingsburg

1001 Chase Ave., Corcoran 93212
Telephone (559) 992-4127. Fax (559) 992-3891

Laguna Irrigation District

A public agency, the Laguna Irrigation District serves an area of southern Fresno County and northern Kings County west of Laton and south, southeast and southwest of Riverdale. The service area includes a substantial portion of the historic Rancho Laguna de Tache grant. The district's southerly boundary is generally along the Kings River. Laguna has multiple points of diversion. Those supply the Grant Canal, A Ditch, Island Canal and Summit Lake Ditch.

SERVICE AREA (acres) 35,000
PINE FLAT STORAGE SHARE (acre-feet) 44,000
UPSTREAM STORAGE SHARE (acre-feet) 8,481
DIVERSION POINTS . . . . . Reynolds Weir, Island Weir, Crescent Weir

5065 19 1/2 Avenue, Riverdale 93656
Telephone (559) 923-4239. Fax (559) 867-3062. Website: www.lagunairrigation.com

Reed Ditch Company

The Reed Ditch Company is a mutual water company serving a small area northwest of Riverdale with water delivered through Murphy Slough The company's Kings River entitlement is combined with the Riverdale Irrigation District and Liberty Mill Race Company under the Murphy Slough Association.

SERVICE AREA (acres) 3,500
PINE FLAT STORAGE SHARE (acre-feet) 7,333
UPSTREAM STORAGE SHARE (acre-feet) 1,413
DIVERSION POINT . . . . . Murphy Slough, from Reynolds Weir, Laton

P.O. Box 445, Riverdale, 93656

Telephone (559) 866-8600. Fax (559) 866-8602

Riverdale Irrigation District

The Riverdale Irrigation District is a public agency serving rural portions of the Riverdale community between Murphy Slough and the Kings River's North Fork. Its water is delivered through Murphy Slough.

SERVICE AREA (acres) 12,200
PINE FLAT STORAGE SHARE (acre-feet) 22,000
UPSTREAM STORAGE SHARE (acre-feet) 4,240
DIVERSION POINT . . . . . Murphy Slough, from Reynolds Weir, Laton

21027 South Brawley Avenue, P.O. Box 683, Riverdale 93656
Telephone (559) 867-3123. Fax (559) 867-3123

Liberty Mill Race Company

A mutual water company receiving water through Murphy Slough, the Liberty Mill Race Company serves an area north and northwest of Riverdale and near Burrel.

SERVICE AREA (acres) 8,100
PINE FLAT STORAGE SHARE (acre-feet) 14,667
UPSTREAM STORAGE SHARE (acre-feet) 2,827
DIVERSION POINT . . . . . Murphy Slough, from Reynolds Weir

P.O. Box 126, Riverdale 93656
Telephone and Fax (559) 867-4428

Burrel Ditch Company

A mutual water company, the Burrel Ditch Company delivers water diverted from Murphy Slough into the company's small service area in the Burrel area, east of Fresno Slough.

SERVICE AREA (acres) 4,500
PINE FLAT STORAGE SHARE (acre-feet) 11,000
UPSTREAM STORAGE SHARE (acre-feet) 2,120
DIVERSION POINT . . . . . Murphy Slough, from Reynolds Weir

3899 West Davis Avenue, Riverdale 93656
Telephone (559) 867-4457. Fax (559) 867-4729

Liberty Canal Company

A mutual water company, the Liberty Canal Company delivers water through the Liberty Canal, which flows northwesterly from Laton to the company's service area north of Riverdale.

SERVICE AREA (acres) 5,300
PINE FLAT STORAGE SHARE (acre-feet) 4,000
UPSTREAM STORAGE SHARE (acre-feet) 771
DIVERSION POINT . . . . . Reynolds Weir, Laton

21027 South Brawley Avenue, P.O. Box 223, Riverdale 93656
Telephone (559) 867-3123

Last Chance Water Ditch Company

A mutual water company, the Last Chance Water Ditch Company serves stockholders within a large portion of Kings County, southwest of Laton, north and west of Hanford, and in portions of the Tulare Lake bed. Last Chance, established in 1873, also signed the original 1897 water schedule and now holds entitlement from the Kings River's low flows.

SERVICE AREA (acres) 39,000
PINE FLAT STORAGE SHARE (acre-feet) 64,000
UPSTREAM STORAGE SHARE (acre-feet) 12,336
DIVERSION POINT . . . . Last Chance Weir, Main Kings River, near Laton

P.O. Box 131, Hanford 93230
Telephone (559) 584-4681. Fax (559) 584-8331

Lemoore Canal and Irrigation Company

A mutual water company, the Lemoore Canal and Irrigation Company serves stockholders in the Lemoore area. The company is the most senior of all Lower Kings River diverters. What was originally known as the Lower Kings River Ditch was begun in 1870. Lemoore signed the original 1897 water schedule. Its large service area has one of the most substantial lower river entitlements, largely based upon the river's low flows.

SERVICE AREA (acres) 52,300
PINE FLAT STORAGE SHARE (acre-feet) 100,000
UPSTREAM STORAGE SHARE (acre-feet) 19,275
DIVERSION POINT . . . . . Lemoore Weir, two miles southwest of Laton

877 W. Iona Ave., P.O. Box 647, Lemoore 93245
Telephone (559) 924-1246. Fax (559) 924-1624

John Heinlen Mutual Water Company

The John Heinlen Mutual Water Company serves stockholders in a Kings County area north and northwest of Lemoore.

SERVICE AREA (acres) 13,100
PINE FLAT STORAGE SHARE (acre-feet) 10,000
UPSTREAM STORAGE SHARE (acre-feet) 1,927
DIVERSION POINTS . . . . . .Lemoore Weir and three South Fork pumps

877 W. Iona Ave., P.O. Box 647, Lemoore 93245
Telephone (559) 924-1246. Fax (559) 924-1624

South Fork Agencies

Army Weir to Empire Weir No. 2

Clark's Fork Reclamation District No. 2069

Clark's Fork Reclamation District No. 2069 delivers a limited amount of water to the Kings County "island" formed by the Kings River's Clark's Fork and South Fork channels northwest of Lemoore. The district, a public agency, has no distribution system. Diversions are all by pumping through 30 individual pumping facilities along the Clark's Fork and South Fork channels. The service area of Clark's Fork is the Kings River's smallest.

SERVICE AREA (acres) 1,920
PINE FLAT STORAGE SHARE (acre-feet) 3,000
UPSTREAM STORAGE SHARE (acre-feet) 578
DIVERSION POINTS . . 30 individual pumps, Clark's Fork and South Fork

P.O. Box 874, Lemoore 93245
Telephone (559) 924-9320. Fax (559) 924-9130

Upper San Jose Water Company

The Upper San Jose Water Company serves a narrow area about seven miles long along the western side of the South Fork, Clark's Fork and the Crescent Bypass, just east of Lemoore Naval Air Station in Kings County.

SERVICE AREA (acres) . . . . . .No Designated Service Area
PINE FLAT STORAGE SHARE (acre-feet) 4,000
UPSTREAM STORAGE SHARE (acre-feet) 771
DIVERSION POINTS South Fork pumps, Summit Lake Canal, Crescent Canal

944 Whitley Avenue, Corcoran 93212
Telephone (559) 992-3118. Fax (559) 992-31119

Empire West Side Irrigation District

A public agency, the Empire West Side Irrigation District serves a narrow territory that stretches more than seven miles along the South Fork's right (west) bank from above Empire No. 1 Weir to below Empire No. 2 Weir, an area running northwest to southwest of Stratford in Kings County. The district is also a State Water Project contractor with deliveries made through Lateral A, which leaves the California Aqueduct at Kettleman City.

SERVICE AREA (acres) 6,400
PINE FLAT STORAGE SHARE (acre-feet) 13,000
UPSTREAM STORAGE SHARE (acre-feet) 2,506
DIVERSION POINT . . . . . Empire Weir No. 1, southwest of Lemoore

21990 Laurel Avenue, P.O. Box 66, Stratford 93266
Telephone (559) 947-3027. Fax (559) 947-3707

Stratford Irrigation District

A public agency, the Stratford Irrigation District's service area is along the left (east) bank of the South Fork, below Empire No. 1 Pool. The district serves the Stratford area of Kings County.

SERVICE AREA (acres) 9,800
PINE FLAT STORAGE SHARE (acre-feet) 11,000
UPSTREAM STORAGE SHARE (acre-feet) 2,120
DIVERSION POINTS . . . . . Empire Weirs No. 1 and No. 2

P.O. Box 538, Stratford 93266
Telephone (559) 924-1246. (559) 924-1624

Lower River Agencies

Empire Weir No. 2 and Tulare Lake Bed

Tulare Lake Basin Water Storage District

A public agency, the Tulare Lake Basin Water Storage District manages South Fork water deliveries at Empire No. 2 Weir near Stratford in Kings County. Its boundary includes nearly the entire Tulare Lake bed. The district is a State Water Project contractor and is connected to the California Aqueduct by Lateral A and Lateral B. Despite the district's state contract, the Tulare Lake bed units rely most heavily on Kings River water for irrigation purposes.

SERVICE AREA (acres) 185,800
PINE FLAT STORAGE SHARE (acre-feet) 33,229
UPSTREAM STORAGE SHARE (acre-feet) 6,404
DIVERSION POINT . . . . . Empire Weir No. 2, Stratford.

1001 Chase Avenue, Corcoran 93212
Telephone (559) 992-4127. Fax (559) 992-3891

Lovelace Water Corporation

A private water company, the Lovelace Water Corporation provides water deliveries to stockholders in portions of the Tulare Lake bed through the Kings River South Fork Canal and the Tulare Lake Canal.

SERVICE AREA (acres) . . . . . .No Designated Service Area
PINE FLAT STORAGE SHARE (acre-feet) 4,000
UPSTREAM STORAGE SHARE (acre-feet) 771
DIVERSION POINT . . . . . .Empire Weir No. 2, Stratford

P.O. Box 877, Corcoran 93212
Telephone (559) 992-5011. Fax (559) 992-4132

Tulare Lake Reclamation District No. 761

A public agency, Tulare Lake Reclamation District No. 761 receives most of its water supply through the Blakeley Canal, originating at Empire Weir No. 2, and Lateral A from the State Water Project. The district delivers water to lands on the western and southwestern sides of the Tulare Lake bed in Kings County.

SERVICE AREA (acres) 40,800
PINE FLAT STORAGE SHARE (acre-feet) 40,647
UPSTREAM STORAGE SHARE (acre-feet) 7,835
DIVERSION POINT . . . . . Empire Weir No.2, Stratford

23311 Newton Avenue, Stratford 93266
Telephone (559) 947-3328. Fax (559) 947-3590

Tulare Lake Canal Company

A mutual water company, the Tulare Lake Canal Company provides water deliveries to stockholders in portions of the Tulare Lake bed.

SERVICE AREA (acres) . . . . . No Designated Service Area
PINE FLAT STORAGE SHARE (acre-feet) 40,647
UPSTREAM STORAGE SHARE (acre-feet) 7,835
DIVERSION POINT . . . . . Empire Weir No. 2, Stratford

1001 Chase Avenue, Corcoran 93212.
Telephone (559) 992-4127. Fax (559) 992-3891

Southeast Lake Water Company

A mutual water company, the Southeast Lake Water Company also provides water deliveries to stockholders in portions of the Tulare Lake bed.

SERVICE AREA (acres) . . . . . No Designated Service Area
PINE FLAT STORAGE SHARE (acre-feet) 18,477
UPSTREAM STORAGE SHARE (acre-feet) 3,561
DIVERSION POINT . . . . . Empire Weir No. 2, Stratford

1001 Chase Avenue, Corcoran 93212
Telephone (559) 992-4127. Fax (559) 992-3891

Lower River Agencies
Island Weir to Mendota Pool

Crescent Canal Company

A mutual water company, the Crescent Canal Company serves an area west of the North Fork and Fresno Slough, several miles west and southwest of Riverdale. Deliveries are through the company's Crescent Canal.

SERVICE AREA (acres) 14,400
PINE FLAT STORAGE SHARE (acre-feet) 22,500
UPSTREAM STORAGE SHARE (acre-feet) 4,337
DIVERSION POINT . . . . . Crescent Weir, south of Riverdale

22895 South Dickenson Avenue, Riverdale 93656
Telephone (559) 867-4461. Fax. (559) 867-4372

Stinson Canal and Irrigation Company

A mutual water company, the Stinson Canal and Irrigation Company serves an area west of the left bank of the North Fork and Fresno Slough, west and northwest of Burrel. Deliveries are through the company's Stinson Canal. It begins at Stinson Weir, west of Riverdale, which under normal operating conditions is the North Fork's final Kings River point of diversion.

SERVICE AREA (acres) 15,500
PINE FLAT STORAGE SHARE (acre-feet) 20,000
UPSTREAM STORAGE SHARE (acre-feet) 3,855
DIVERSION POINT . . . . . Stinson Weir, west of Riverdale

1100 W. Shaw Avenue, Suite 148, Fresno 93711
Telephone (559) 229-4740. Fax (559) 229-4720

James Irrigation District

Largest in territory among North Fork units, the James Irrigation District, organized in 1920, is a public agency. The district formerly served its agricultural users with Kings River water diverted through the James Main and Beta Main canals. Since 1963, the district's primary surface water supply (under two different agreements between the James and Tranquillity irrigation districts and the other Lower River units) has been Central Valley Project water pumped from Mendota Pool under a U.S. Bureau of Reclamation contract, thus avoiding significantly large Kings River channel conveyance losses. The district also has San Joaquin River exchange contractor entitlement and operates Reclamation District 1606, which maintains James Bypass levees and channels downstream from State Route 145. Reclamation District 1606 also delivers some CVP water. James diverts Kings River water only when flood release flows are available. The district also maintains substantial wellfield and groundwater recharge operations.

SERVICE AREA (acres) 25,800
PINE FLAT STORAGE SHARE (acre-feet) . . . . . 20,000 *
UPSTREAM STORAGE SHARE (acre-feet) . . . . . 3,855 *
DIVERSION POINTS James Weir, southeast of San Joaquin; Mendota Pool

P.O. Box 757, San Joaquin 93660
Telephone (559) 693-4356. Fax (559) 693-4357

*Now held and utilized under agreement by the other Lower River units.

Tranquillity Irrigation District

Most northwesterly of all KRWA units is the Tranquillity Irrigation District, a public agency organized in 1918. TID is the second oldest such agency in Fresno County. The district's surface water supply is from the Central Valley Project under a U.S. Bureau of Reclamation contract and is pumped from Mendota Pool. Tranquillity's former Kings River diversion facilities, the Lone Willow Channel and Beta Main Canal, were last used in 1958 and are abandoned. The district has joined James Irrigation District in a pair of agreements under which other Lower Kings River units use James and Tranquillity entitlements. The district delivers some municipal and industrial water.

SERVICE AREA (acres) 10,700
PINE FLAT STORAGE SHARE (acre-feet) . . . . . 8,000 **
UPSTREAM STORAGE SHARE (acre-feet) . . . . . 1,542 **
DIVERSION POINT . . . . . Mendota Pool

25390 West Silveira Street, P.O. Box 487, Tranquillity 93668
Telephone (559) 698-7225. Fax (559) 698-5105. Website: www.trqid.com

**Now held and utilized under agreement by the other Lower River units.

The Kings River Through History

Before 1850

1805: Spanish explorer Gabriel Moraga, on January 5, discovers and the next day names El Rio de los Santos Reyes, River of the Holy Kings.

1846: Rancho Laguna de Tache land grant made by Mexico along lower Kings River.

1850s

1850: California becomes a state. All of Kings River is initially within Mariposa County.

1852: Tulare County organized.

1852-55: Poole's Ferry (north of modern Reedley) in operation.

1854: Whitmore's Ferry established at Kingston (southwest of modern Laton).

1856: Fresno County organized.

1856: Smith's Ferry established at modern Reedley.

1858: First Kings River diversion in Byrd Ditch, Centerville Bottoms.

The Kings River and "Tache Lake" (Tulare Lake), among the few features mapped by an Army expedition in 1850, California's statehood year.

1859: Dennis Ditch developed, Centerville Bottoms.

1860s

1861: Massive flood begins to form portions of Cole Slough channel.

1866: First Kings River water claim filed.

1867: Largest Kings River flood ever observed completes Cole Slough formation, destroys town of Scottsburg in Centerville Bottoms.

1868: Fink Ditch developed in Centerville Bottoms; Centerville Canal constructed; Dutch John Cut (east of Laton) initially developed as small ditch.

1869: Kings River first bridged at Kingston.

1870s

1870-71: Fresno, Lemoore canals developed.

1872: Gould Canal developed.

1872: Zalda Canal developed near Riverdale; floodwaters in 1879 and 1884 begin enlarging the canal into what ultimately becomes the Kings River's North Fork.

1872: Central Pacific Railroad establishes Fresno, bridges Kings River.

1873: Peoples Ditch, Last Chance Ditch, Grant Canal developed.

Moses J. Church, known as the "father of Fresno Irrigation" for developing the Fresno Canal and its company.

1875: Lone Tree Channel, Riverdale Ditch developed.

1877: Centerville and Kingsburg Canal developed.

1878: Tulare Lake fills and spills through Summit Lake into Fresno Swamp, Fresno Slough and San Joaquin River for last time.

1880s

1882: Liberty Canal, Liberty Millrace Ditch developed.

1882-83: '76 (Alta), Fowler Switch canals developed.

1883: Drought-year lawsuits assert riparian rights; Fresno Canal brush dam blown up by C&K Canal interests.

1885: James "East Side" (James Main) Canal developed.

Looking over the Fowler Switch Canal headgate in 1898.

1885-88: Appropriated water users lose in litigation to riparian rights claimants.

1885-87: Crescent Canal developed.

1887: Wright Act authorizes formation of irrigation districts.

1888: Alta Irrigation District organized.

1889: Stinson Canal developed.

1889-93: James "West Side" (Beta Main) Canal developed.

1890s

1890: Burrel Ditch developed.

1891: Reed Ditch established.

1892: Fresno Canal & Irrigation Company buys Lower River riparian lands (including Laguna de Tache Grant), water rights.

1893: Kings County formed, named for river.

1894: Summit Lake Ditch (originally known as "Calamity Ditch") developed.

1895-1900: First four Tulare Lake bed canals developed as lake recedes.

1896: English financiers take over Fresno Canal Company, Laguna lands; Empire West Side Canal developed.

1897: First water entitlement schedule covers Kings River low flows; last of Centerville Bottoms ditches built.

1898-1917: Fresno Canal and Irrigation Company engineer I. Teilman administers river.

1898: Tulare Lake empties for first time.

1899: First practical agricultural pumping.

1900s

1900: Blakely Canal developed.

1901: First surveys made for Pine Flat Dam.

1902: Island flume built across Cole Slough near Kingsburg.

1903: Fresno Canal Company buys Consolidated Canal Company, effectively controls half of Kings River service area; Island Canal, A Ditch developed.

1903-04: Lakelands Canal developed.

1906: Major flood event.

A rock and brush dam spans the river before construction of Fresno Weir in 1905.

1910s

1912: Movement begins to develop Pine Flat Dam.

1912-15: James Bypass developed to avoid meandering Fresno Slough channel.

1914: State Water Commission Act enacted.

1915: Legislature passes Pine Flat-KRCD Act; district organization not achieved.

1916: Stratford Irrigation District formed.

1918: Tranquillity Irrigation District formed; Tulare Lake Canal developed.

1917: Charles L. Kaupke assigned to Kings River by California Water Commission; becomes interim Watermaster in 1919.

1920s

1920: Reclamation of Summit Lake area completed southwest of Riverdale.

1920: Fresno, Laguna, James and Riverdale irrigation districts formed.

1921: Consolidated Irrigation District formed.

1921: Water users ask state to develop temporary water diversion schedule.

1922: First broad trial water entitlement schedule enacted.

1923-24: Worst single-year Kings River drought on record.

1925: Unsuccessful attempt made to form Kings River Water Storage District.

1926: Tulare Lake Basin Water Storage District formed.

1927: KRWA and permanent entitlement schedules established.

1927: First Kings River power plant developed at Balch Camp.

1928: Riparian rights subjected statewide to reasonable beneficial uses.

1930s

1931: Empire West Side Irrigation District formed.

1932: First groundwater recharging by Consolidated Irrigation District.

1933-36: KRWA proposes that Central Valley Project develop Pine Flat Dam.

A portion of Tulare Lake that reappeared following two huge flood events in 1937.

1936: Congress assigns flood control to U.S. Army Corps of Engineers.

1937: Major flood events in February, November.

1938-44: KRWA campaigns for Corps, not U.S. Bureau of Reclamation (USBR), to build Pine Flat Dam.

1940s

1940: Corps, USBR complete separate Pine Flat feasibility studies.

1940: Kings Canyon National Park formed, excludes reservoir sites in Cedar Grove, Tehipite Valley.

1944: Flood Control Act authorizes Pine Flat as Corps project.

1946: President Truman orders USBR to negotiate Pine Flat storage and repayment contracts.

1947: Ground broken on Pine Flat Dam.

1949: New master Kings River agreement and amended water right indenture including the entire river in the water schedule is signed.

1949: Pine Flat Dam construction under way.

1949-50: Congressional bid made to place Kings River in federal Central Valley Project.

1950s

1950: KRWA launches effort to form Kings River Conservation District.

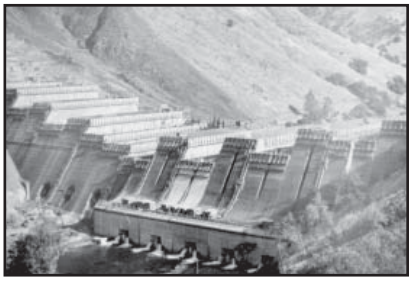
1950: Last major uncontrolled Kings River flood event.

1951: KRCD established, ratified by voters.

1953: KRCD negotiates interim Pine Flat contracts with USBR.

1953: First Pine Flat Reservoir water storage.

1954: Pine Flat Dam completed.



Pine Flat Dam begins rising over the Kings River in the early 1950s.

1954: Kings River weather modification program begins.

1955: Record Kings River flood flow captured safely in Pine Flat Reservoir.

1958: PG&E completes Wishon, Courtright lakes and new North Fork power plants.

1959: KRCD assumes lower river channel, levee operation, maintenance.

1960s

1961: Interior Department makes bid to impose Reclamation Law, acreage limitation on Kings River.

1963: Permanent Pine Flat contracts, new master Kings River agreement signed.

1964: KRWA-CDFG fishery agreement signed.

1965: Cedar Grove, Tehipite Valley reservoir sites annexed to Kings Canyon National Park.

1965: KRCD, KRWA move into new Jensen Avenue offices in Fresno.

1967: State Board grants Kings River water rights permits.

1968-69: First segment of levee, channel improvements developed by KRCD, Corps of Engineers.

1969: State Board declares Kings to be "fully appropriated."

1969: Huge snowpack prompts largest-ever Pine Flat releases into river, 17,000 c.f.s.

1970s

1972: Kings River appears to prevail in Reclamation Law test case.

A lower Kings River channel left dry by the 1976-77 drought.

1973: Energy crisis spurs interest by KRCD in new power, reservoir projects.

1975: Preliminary Federal Power Commission permit given for Pine Flat Power Plant.

1976-77: Back-to-back critical drought years.

1977: KRCD, KRWA agree on Pine Flat Power Plant water use; KRCD voters authorize Pine Flat Power Plant bonds.

1977: U.S. Supreme Court upholds Reclamation Law imposition.

1978: KRCD applies to FERC for Dinkey Creek Power Project.

1979: Pine Flat Power Plant EIS completed and water rights permit granted by State Board.

1980s

1980: Pine Flat Power Plant construction begins.

1982: Congress relieves Kings River of Reclamation Law compliance.

1984: Pine Flat Power Plant completed, dedicated.

1985: Rodgers Crossing Dam feasibility study begins.

1986: Lack of power purchaser halts Dinkey Creek Project.

1987: Federal legislation halts Rodgers Crossing Project.

1987-92: Worst extended sequential critical drought of record.

1990s

1991: Public trust complaint filed on fishery issues.

1991-99: KRCD, KRWA pursue long-term fishery solution.

1993: KRCD begins active involvement in Corps environmental studies.

1995: KRCD forms first of three Groundwater Management Areas to aid in effort to improve groundwater resources.

1997: Record calculated natural flow, 112,000 c.f.s., on January 3; Pine Flat Dam prevents downstream flooding.

1999: KRCD, KRWA join California Department of Fish and Game in establishing Kings River Fisheries Management Program.

2000s

2000: Thorburn Spawning Channel constructed near Piedra as first Kings River Fisheries Management Program project.

The Pine Flat Turbine Bypass is a tool to enhance the cold water fisheries below Pine Flat Dam.

2001: KRCD commemorates 50th anniversary.

2001-03: Corps of Engineers constructs Turbine Bypass at Pine Flat Dam.

2001-08: Several Kings River fishery habitat improvement projects undertaken.

2002: KRWA begins installing telemetry at key locations to aid in water and fishery habitat management.

2002: KRWA commemorates 75th anniversary.

2002: KRWA and KRCD lead organization of Southern San Joaquin Water Quality Coalition.

2002: KRCD reaches agreement with state DWR to construct two gas-fired "peaker" power generating units.

2002: Agricultural water quality issues begin to escalate.

2003: Pine Flat Dam Turbine Bypass System is completed and dedicated.

2003: KRCD begins construction on $43 million peaking power plant in Malaga.

2004: 50th anniversary of Pine Flat Dam's completion.

2004: KRCD launches Community Choice power project investigation.

2004: Pine Flat Power Plant renamed to honor late KRCD General Manager Jeff L. Taylor.

2004: Upper Kings Basin Water Forum established.

2004: Kings River water quality compliance monitoring begins; landowners begin joining in Kings River water quality coalition.

Actors portraying explorer Gabriel Moraga and a member of his party re-enact the river's 1805 discovery in a May 2005 ceremony at Reedley Beach.

2005: Kings River Discovery Bicentennial celebrated.

2005: KRCD's new 96-megawatt Malaga Peaking Power Plant is completed, dedicated.

2007: Municipalities establish, KRCD begins managing San Joaquin Valley Power Authority.

2008: Upper Kings Forum receives first state grant, $6 million, for groundwater projects.

2009: San Joaquin Valley Power Authority, KRCD suspend Community Choice efforts due to recession.

Quick Facts About The Kings River

LOCATION AND LENGTH

Originates in the Sierra Nevada and continues through eastern and southern Fresno County, northwestern Tulare County and northern and central Kings County. One branch, including Clark's Fork and the South Fork, terminates in the Tulare Lake bed. The North Fork flows back into Fresno County through the James Bypass to its confluence with the San Joaquin River at Mendota Pool. The length of the river totals 272 miles.

AVERAGE ANNUAL RUNOFF

1,745,000 acre-feet, ranging from a high of 4,476,400 acre-feet (1982-83), to a low of 391,700 acre-feet (1923-24).

CONSUMPTIVE RIGHTS

Vested rights held by the 28 member agencies of the Kings River Water Association.

SIERRA NEVADA RESERVOIRS

Courtright Lake, Lake Wishon, Black Rock Reservoir, Balch Afterbay and Pine Flat Reservoir with a total storage capacity of 1,254,000 acre-feet.

PINE FLAT RESERVOIR

Storage capacity of 1,000,000 acre-feet at normal maximum pool (elevation 951.5 feet), extending about 20 miles upstream from the dam, covering about 6,000 acres in surface area with 67 miles of shoreline.

PINE FLAT DAM

Completed in 1954 by the U.S. Army Corps of Engineers. Provides water conservation and flood protection for the Kings River service area. A concrete-gravity structure 1,820 feet long and 429 feet high at its maximum section.

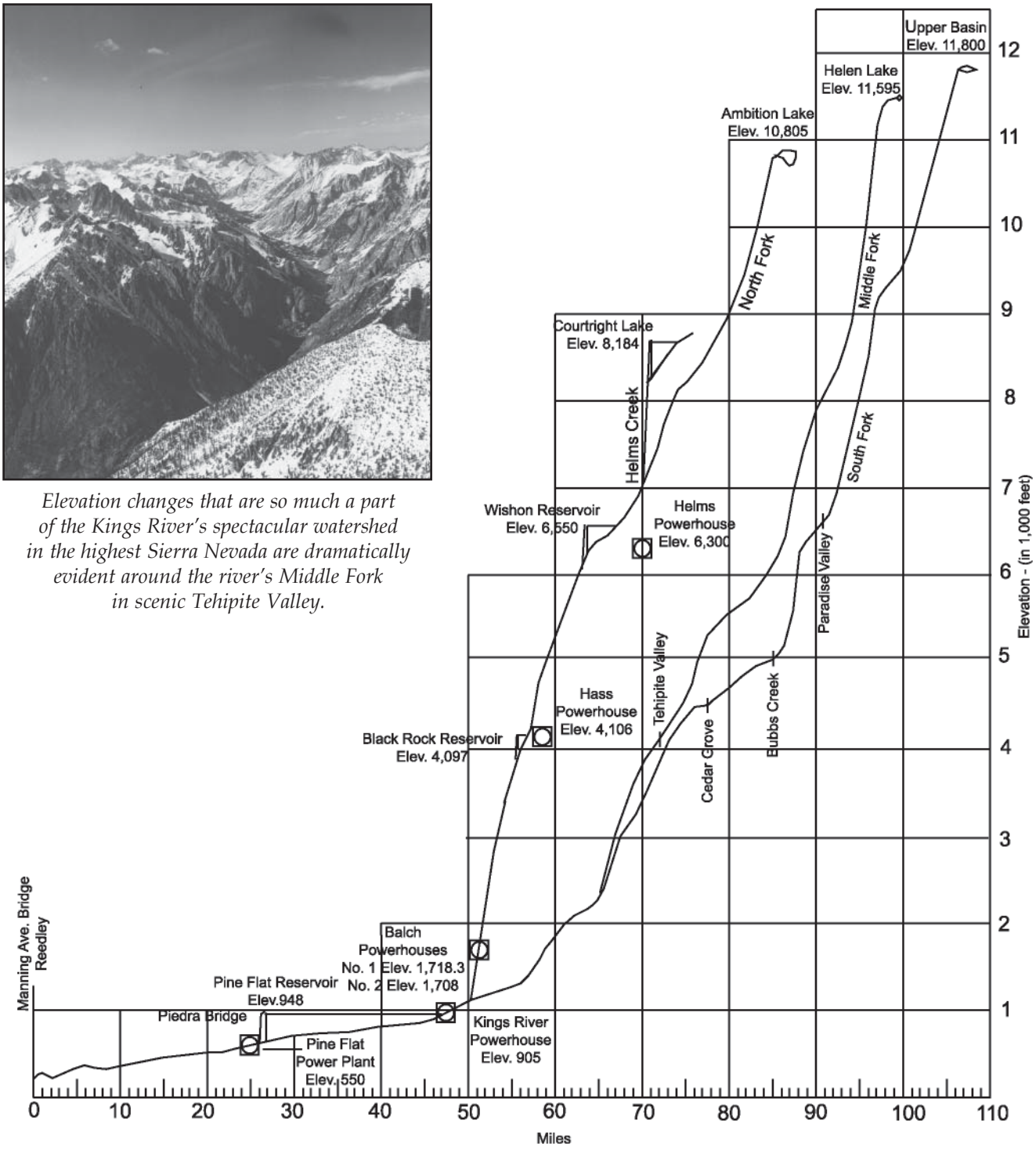
POWER FACILITIES

Pacific Gas and Electric Company: Helms Pumped Storage Powerhouse, Haas Powerhouse, Balch Powerhouses No. 1 and 2, and Kings River Powerhouse. Total electricity generating capacity, 1,547 megawatts.

Kings River Conservation District: Jeff L. Taylor-Pine Flat Power Plant. Located at the base of the Pine Flat Dam on the Kings River. Water releases from the reservoir flow to the power plant through the dam in 13.5-foot, steel-lined penstocks to three generating units, each with a capacity of 55,000 kilowatts (55 MW). Electricity generating capacity, 165 megawatts. Average annual energy output is 406 million kilowatt-hours. KRCD also operates the 96-megawatt Malaga Peaking Power Plant, a natural gas-fired facility southwest of Fresno in the community of Malaga.

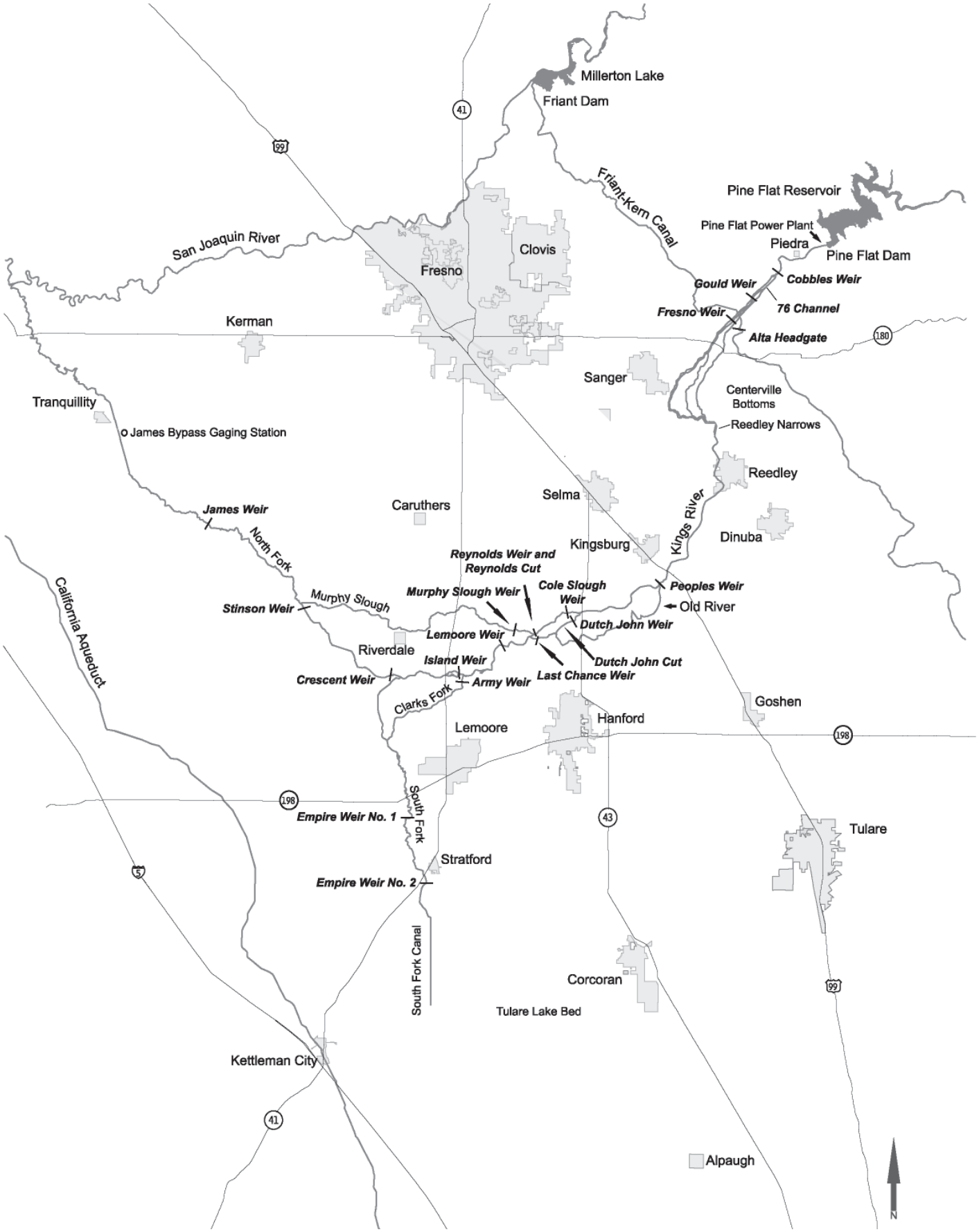
The Kings River's Profile

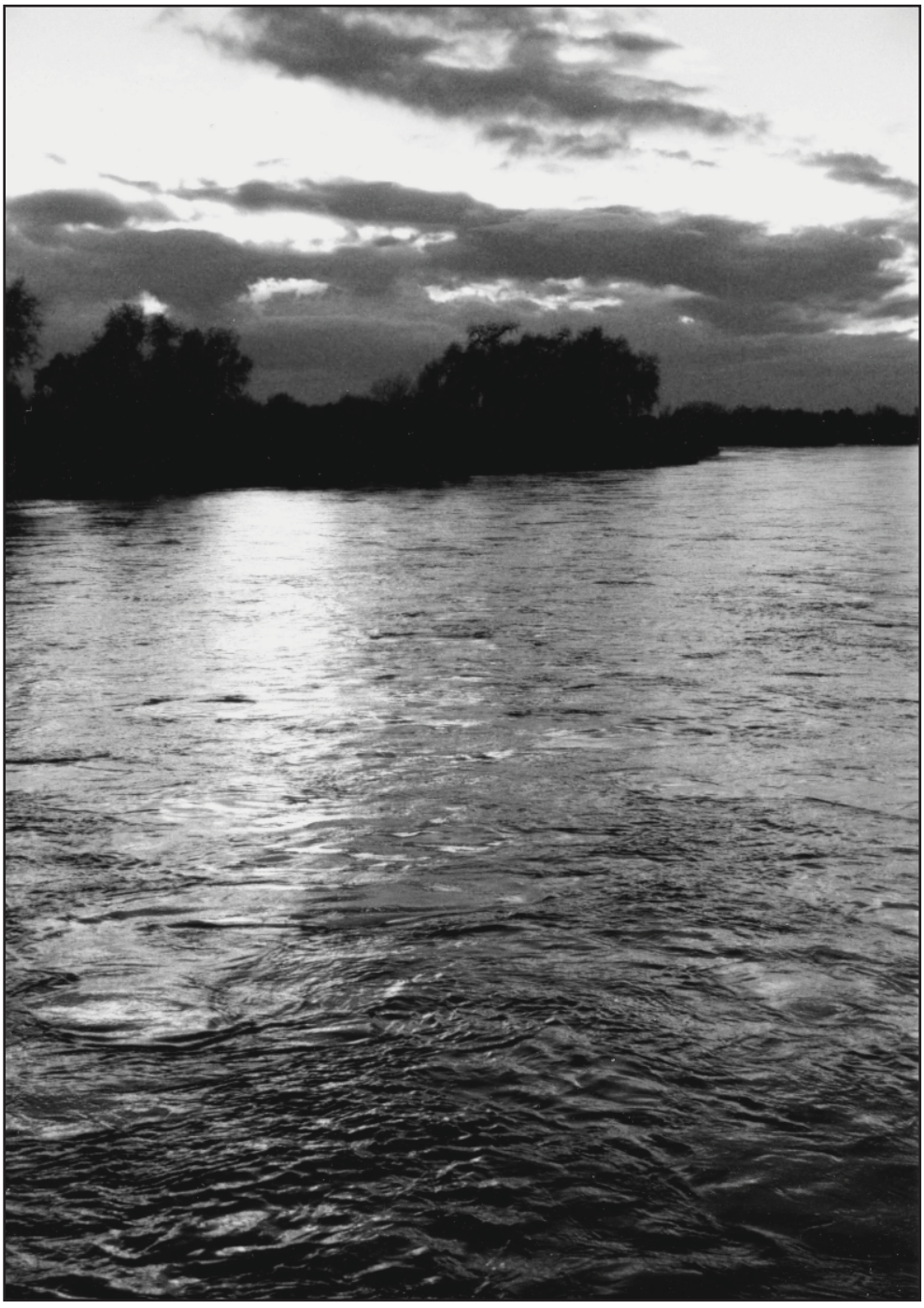
Elevation changes that are so much a part of the Kings River's spectacular watershed in the highest Sierra Nevada are dramatically evident around the river's Middle Fork in scenic Tehipite Valley.



From high in the Sierra Nevada and scenic Kings Canyon in Central California, the Kings River plunges toward the San Joaquin Valley. The river's descent is abrupt, making possible Pacific Gas and Electric Company's extensive North Fork hydroelectric project. After passing through the Kings River Conservation District's Pine Flat Power Plant, the river's hard-working water flows into the thirsty valley. It brings life to more than a million of the Earth's most fertile and productive acres and dozens of communities. In so many ways, the Kings River is its service area's most valuable resource.

Features Along the Kings River





Another day comes to a close as a January sunset in 1997 reflects upon the Kings River, swollen by a flood release, near Laton. Whether the seasons are wet or dry, the Kings River and the dedicated people who manage its vital resources continue the timeless task of delivering the water that makes possible life and bountiful cultivation over a million acres of this fertile but arid valley.