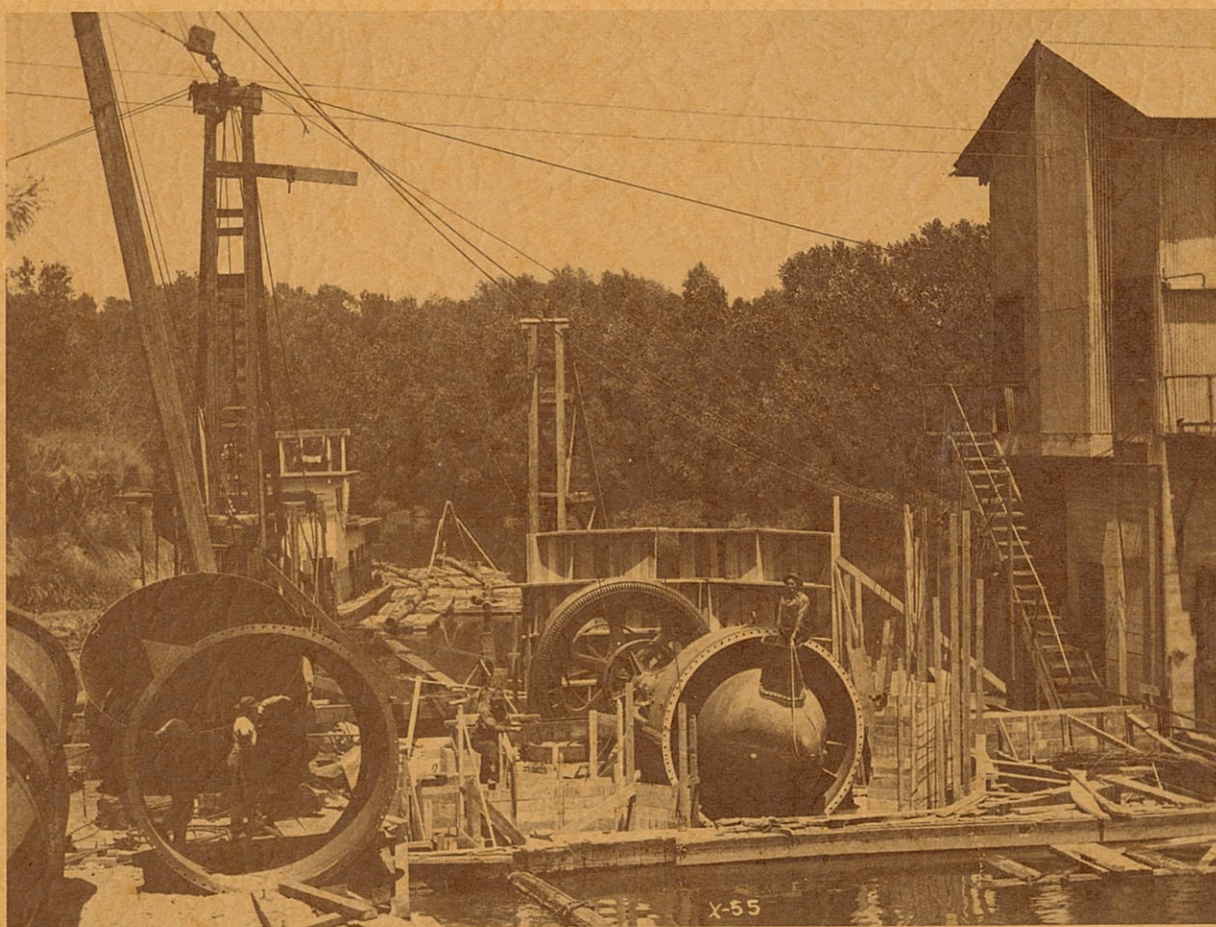
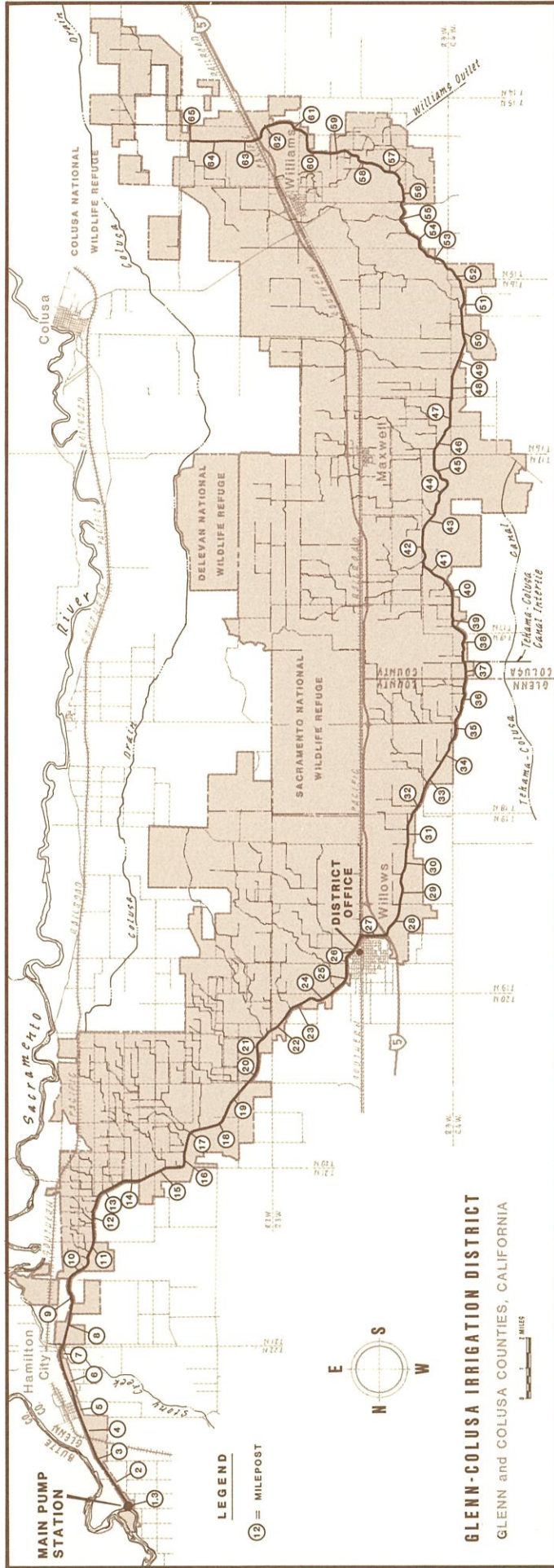


Where Water Is King



By Cynthia F. Davis



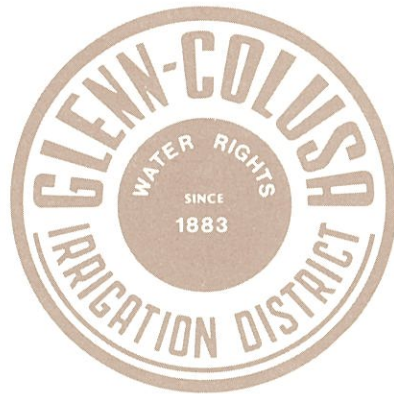
GLENN-COLUSA IRRIGATION DISTRICT
GLENN and COLUSA COUNTIES, CALIFORNIA




Where Water Is King



The Story Of



Written by
Cynthia F. Davis



Published by
Glenn-Colusa Irrigation District
P.O. Box 150
Willows, California 95988

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Preface

The story told in this book, is in my opinion, a fascinating one of vision, struggle and success repeated several times over. I hope you will find it as interesting to read as it has been for me to have a part in bringing it to you. The notion occurred to me many years ago and the seeds were planted. Since then the idea has been nourished and cultivated. With the support of the Board of Directors, I have seen the project grow to where it is now harvest time.

I have intended the story to be published as a part of the District Centennial Celebration of its first claim to water rights on the Sacramento River. This record informs the public of the priority and value of those water rights. They are the most valuable asset the Glenn-Colusa Irrigation District has, and all the landowners in the District must be continually mindful of the need for future diligence in their use and preservation.

The support and interest of the District Board of Directors in the production of this history shows a spirit and vision which merits our sincere appreciation and praise. Their participation has greatly contributed to both the success of the book and the District.

In addition to my pride in District efforts, I am grateful to many other people who have assisted in preparing this story. I wish to make special acknowledgement to Cynthia Davis, who has worked so hard and has justly earned credit for being its "author."

The accomplishments of the District, since 1967, are described in the last chapter of *Where Water is King*. These have been satisfying years and I appreciate the opportunity to describe those years in my part of the story.

The slogan, "*Where Water is King*," has been used in the area for decades and has some historical significance, although its exact history is somewhat obscure. We have been able to determine that it may have been originated by local realtors sometime in the 1920's, and was used on billboards and advertisements to promote land sales. The slogan was apparently used at a later date by the County Chamber of Commerce on promotional brochures. "*Where Water is King*" seems appropriate for the title of our history as the use of water for the irrigation of crops has been literally responsible for the economic prosperity of both Glenn and Colusa counties.

This district record is intended to serve as a reference source for us and our successors. We hope that it will also be of interest to others, and that some may be inspired to do likewise. In the future, additional chapters will be written and certainly they will be fascinating and of absorbing interest wherever water continues to be essential to human success and happiness.



Robert D. Clark

Acknowledgements

I would like to express my thanks to the Glenn-Colusa Irrigation District for allowing me the opportunity to compile this history. I am especially grateful to Robert Clark, who proposed the project, helped with the research, and wrote the last chapter. He began working for the District in 1967 as Engineer and Superintendent, taking over the position of Manager/Secretary in 1970. He has worked for the implementation of a master rehabilitation plan for nearly seventeen years and is more familiar with the plan than anyone. The time he took from his very busy days to prepare a chapter on the master rehabilitation plan and construction is greatly appreciated.

It would be impossible to name all those who have encouraged and supported me during the research and writing stages. Thanks are especially due to my family, friends, and the District office staff and employees, who have offered ideas and assistance throughout the project. The expert opinions of Joseph Patten and Paul Minasian were sought to clarify coverage of the all important water rights, and each contributed to the writing as well. Cecile Cramer, Warren Carlson, and Dr. Jacqueline Barnhart, have all volunteered time out of their busy schedules to assist with the preparation for which I'm very grateful.

The staffs of historical organizations and libraries throughout Northern California were extremely helpful when called upon; special thanks are due to Bill Jones and the staff of the Special Collections Department, Meriam Library, California State University, Chico. Willa Baum, of the Regional Cultural History Project, Bancroft Library, Berkeley, conducted and transcribed interviews with Charles Lambert and William Durbrow, pioneers in the Glenn-Colusa Irrigation District's organization. These personal histories have been a wonderful source of information. A number of former employees and board members consented to interviews for the purpose of adding perspective, background information, and details; their time and recollections have been extremely beneficial.

The Colusi County Historical Society's publication, *Wagon Wheels*, provided a great deal of interesting information. Florence Ewing, Editor, has been especially cooperative in granting the use of material and photographs.

Many individuals and organizations have been generous in the gracious loan of their photographs for publication in *Where Water is King*. Thanks are extended to:

Cecile Cramer
Robert Durbrow
Dophelia and Sam Gibson
Charles A. Henry
Ben Johnson
Erwin Page
CH2M/Hill
Robert G. Fisher Construction Company
Colusi Historical Society, *Wagon Wheels*
Special Collections Department,
Meriam Library, CSU, Chico
Sunset Magazine
United States Bureau of Reclamation
The Willows Daily Journal
The Museum, Willows
Jack Willson and the Rice Experimental Station

The preservation of the Glenn-Colusa Irrigation District's records over the years has been an essential part of organizing this history. The Sacramento Valley Irrigation Company's records, maps, and photographs, dating back to 1908, have been preserved by various individuals in the community; some were even rescued from fire. Large scrapbooks have been prepared by District employees throughout the years, which record the decades of the 1920's through the 1930's, and

then after a break, resume from the late 1960's to the present. The efforts of those unidentified individuals who organized them have been well worthwhile.

Thanks are also due to the family of Howard Allard who donated photographs, documents, letters, and reports, which he had collected over the course of his long service to the District. Joseph Patten, water resources engineer and District representative during the Central Valley Project negotiations, deserves special recognition for his role in documenting the history of the negotiations. The report is so thorough and well-done that it made other sources virtually unnecessary.

The Robert G. Fisher Construction Company of Fresno, California, who built the new pump station, have financially assisted in the printing of this book. The company's participation in this project is greatly appreciated.

Finally, the current Board of Directors should be commended for the important part they are taking in recording the Glenn-Colusa Irrigation District's history. They have not only supported the publication of *Where Water is King*, but are also in the process of implementing a microfilm program to insure the preservation of records for future use. This program is of particular significance; the history of the Glenn-Colusa Irrigation District will continue to be of interest to future generations as the value of water resources gains greater recognition.

The Central Irrigation District



The quest for water is eternal and seldom has this been better illustrated than in California. The discovery of gold in 1848 led to the arrival of thousands of people from all over the world. The majority of these Argonauts were attracted to the mining fields of California by the lure of instant wealth. Water was of primary importance to miners as it was the essential tool necessary to the business of hydraulic mining.

It soon became apparent that California had need of all available water. Diversions from streams for mining resulted in water shortages during periods of low flow and led to the necessity of filing for water rights. The "right of appropriation" was the procedure followed by the mining community. After posting intentions at the point of diversion, the miners conveyed water from the rivers and creeks by ditches or flumes to the location of the ore and its washing.¹ "First in time, first in right," was the rule here and it was enforced by the old mining courts and six-shooters.²

In some ways in conflict with this system based upon appropriation, the first California State Legislature of 1850 adopted the Common Law of England in regards to water rights. This incorporated into California law the principle of "riparian rights," which entitles the owner of land bordering a stream to full access and reasonable use of the waters, regardless of the needs of those whose property does not happen to be adjacent to the stream.³ These two systems of title to water were inherently in conflict and led to years of litigation, which eventually resulted in the passage

of a constitutional amendment.

The miners encountered a constant shortage of food and provisions at the diggings as a result of the difficulty in shipping goods to California. Freight required approximately three months to be moved between the Atlantic Coast ports and California, which made supplying the rapidly multiplying population of the gold fields extremely difficult.⁴

The need for a local and permanent food supply quickly became evident. Many prospectors who had failed to make their fortunes in the mines recognized this need, along with the potential of the land and climate of California. They began to settle permanently, pursuing other occupations such as agriculture and stock-raising. This, along with the admission of California as a state in 1850, led to the rapid exploration and settlement of all parts of the state. Agriculture quickly became productive and profitable on both medium and large sized ranches.⁵

A few enlightened individuals recognized the impact the use of water for irrigation could have on the agricultural production. A prominent northern California pioneer, General John Bidwell, explained the relationship between mining and irrigation:

Irrigation is the natural successor to hydraulic mining, and important beyond computation. Without it we can never know or have any conception of California's productive capacity. By showing that waters can be conducted almost everywhere, hydraulic mining has unwittingly solved a most important feature of irrigation.⁶

Will S. Green, another pioneer of northern California and one of the founders of Colusa, also anticipated the benefits to be derived from irrigation. He perceived that industries relating to the soil would be the enduring source of wealth in California, and firmly believed that the use of irrigation could transform the Sacramento Valley into a veritable "garden." The feeling he had for the area was expressed in his description of his first impression of the Sacramento Valley, in 1850:

Perhaps you never saw a spot of earth so beautiful that the love of it would take you from all the enchantment as that of 1849 and cause you to turn a deaf ear to all the stories of bonanzas found and fortunes made. There are but few men now living who saw the Sacramento Valley as I saw it.⁷



Will S. Green, 1832-1905

For over fifty years he devoted much of his time, energy, and resources to the promotion of irrigation, and the development of the Sacramento Valley.

William Semple Green was born in Kentucky on December 26, 1832. He received very little formal education and as a result of financial reverses suffered by his father he found

it necessary to begin working at an early age. By the time he reached the age of fifteen he was earning a man's wages of \$7.00 a month for plowing, with which he helped to support his family.⁸

One of his maternal uncles, Dr. Robert Semple, had settled in California after participating in the Bear Flag Revolt and establishing the city of Benicia on the Carquinez Strait. His glowing accounts of California, combined with the news of the gold rush, encouraged the sixteen year old Will Green to seek his fortune in California.

He borrowed the money for the journey at 400% interest and left for California on August 1, 1849, in the company of another uncle, Colonel Charles D. Semple; a cousin, John Semple; and a friend, James Yates.⁹ They traveled by steamer, arrived in San Francisco on October 10, 1849, and chartered a launch to take them to Dr. Semple's residence in Benicia.¹⁰

Dr. Semple had some experience as a pilot on the Mississippi River before coming to California and was interested in determining the capacity of the river for shipping products from the valley to the ocean. To achieve this he traveled down the river aboard two logs bound together. His descent began in 1847 at the mouth of Stony Creek, where he experienced a great many difficulties due to snags and rapids, until he reached the site of an Indian village known as the Colus Rancheria. From this point onward he had no problems in navigating the river.¹¹ This experience resulted in his belief that the area around the Colus Rancheria would prove to be the head of year round navigation on the Sacramento River.¹²

When his brother Charles arrived looking for a place to locate in 1849, Dr. Semple recommended the Colus site for a new town. It seemed an excellent location for several reasons: it was along the route the teamsters took to the mine fields, people had begun to settle on the plains in order to grow grain with which to supply the teamsters, and it would be the focus of river navigation in northern California.

While Charles was investigating the pos-

sibility of establishing a town at the Colus rancheria, as suggested by his brother, Will remained in Benicia employed at a wide variety of jobs. These included digging cellars and foundations; cutting redwood shingles and transporting them to Benicia for the construction of houses; and delivering the mail to Napa and Sonoma counties. He then took charge of the *Lucy Long* the first steam-ferry to operate across the straits of Carquinez. Meanwhile, Charles had purchased the tract of land, known as the Colus Grant, from John Bidwell on January 22, 1850.¹³ He spent a portion of the spring exploring and laying out the town he had decided to name Colusa.

In July, Will assisted in piloting the *Colusa*, a steam boat that Dr. Semple had had constructed in Benicia, up the river to deliver supplies to his Uncle Charles. He had a great deal of difficulty navigating the steamer over the last seven miles of the trip, and it soon became obvious that Charles had erred in fixing the location of the townsite.¹⁴ He had mistaken a small encampment of Indians for the Colus Rancheria, and started laying out the town of Colusa in the wrong place.¹⁵

Will assisted Charles (and the crew he had employed to chop wood) in relocating the materials and equipment to the correct location. He helped to survey and lay out the town of Colusa in its present location. He and Charles marked off lots and blocks, provided for alleys and three parks, and staked out the wide streets that have allowed for the growth and expansion of Colusa.

One of their first projects was the construction of a two story building which served as a hotel, restaurant and store. James Yates, who had traveled to California with Will and Charles, joined Will in operating this establishment, and then the two of them opened a bakery in 1851.¹⁶ Will turned his attention to farming in 1853, when he and Dr. Semple took over a farm located on Freshwater Creek. He was fortunate enough to have one of the few gardens in the county which was not destroyed by grasshoppers in 1855. The vegetables from this seven acre garden were sold from Colusa to Shasta.¹⁷

Although he had received little formal schooling, Will had managed to educate himself by reading and studying in his spare time.

He took up the study of civil engineering and began to equip himself for that profession after his arrival in Colusa. He ran for the office of county surveyor in 1855, but was defeated by Colonel William M. Ord. At about this time he also began writing stories and articles for publication in newspapers and magazines. One of his first articles, written for the *California Farmer* in 1855, advocated the use of irrigation for the "arid and semi-arid valley."¹⁸ In 1857 he ran successfully for county surveyor and retained the position for the next ten years, becoming thoroughly familiar with the topography of the county.¹⁹

In 1862 Will Green was married to Josephine Davis, at which time they moved to a ranch on Grand Island. His official duties did not demand all his time, so he planted crops and attempted to farm on a larger scale than he had previously. Two successive crop failures, as a result of dry seasons, set them back financially and caused Will to abandon agriculture as an occupation.²⁰ This experience only served to deepen his conviction that the future prosperity of the valley depended on the development of a reliable water supply. His next occupation gave him the opportunity to publicize his convictions.

The *Colusa Sun* had been started as a weekly newspaper the year before and was up for sale in the fall of 1863. Will and a friend purchased the paper, which he edited until his death in 1905. Under his guidance the *Sun* became one of the foremost rural papers in the state, and his editorials were copied by many of the major papers.²¹ He used the paper as a vehicle to advocate and promote enterprises that would benefit both the community and the state.

During this period Will actively worked to implement improvements in a variety of positions. On a local level he served as Superintendent of Schools; Chairman of the City Board of Trustees; Mayor of Colusa; a member of the Fire Department; and one of the organizers of the Chamber of Commerce and the Granges.²²

On the state level, he was elected to represent Colusa and Tehama counties in the Assembly of 1867. Believing the land laws of the state to be unfair to the poor, he prepared a bill to systemize these laws. The bill was

passed unanimously through both houses and became known as Green's Land Law, an Act for the Management and Sale of the Lands belonging to the State.²³ He also served as a State Library Trustee from 1890-1898; was appointed to Surveyor General of the State of California by President Grover Cleveland in 1894; and filled an unexpired term as State Treasurer in 1899, at the request of Governor Budd.²⁴

Will's interest, in whatever capacity he served, was usually focused on the land of California, and particularly the irrigation of the soil. He was convinced that California could be built into a great state on the basis of the land and its potential productivity. John P. Irish sums up his dedication to the land and state in the excerpt below:

He knew land and loved it. . . . As an engineer he surveyed the land. As a legislator he drew the land code of the state. As Surveyor General of the United States he protected the public domain for the settlers who would till it. As treasurer of the state, he conserved and economized the taxes paid by the owners of the land. As the foremost editorial writer of the state, he considered the land as the first material object of human interest. He developed the first plans for irrigation and drainage of the Sacramento Valley, and though high-salaried engineers have wrought upon the same problem, his plans stand unimpeached.²⁵

Green had begun trying to devise a feasible system of irrigation to be utilized in the valley in 1860. He surveyed the west bank of the Sacramento River, from Tehama to Stony Creek, in an effort to establish a point of diversion for a canal. The point he eventually settled on is the site at which the Glenn-Colusa Irrigation District pumping plant is located today. He hired A.S. Bender, a noted hydraulic engineer, to examine the survey in the latter part of 1864. The two of them carefully went over the survey, and began to work on plans for culverts, gates, etc., after Bender declared the project to be a practical one.²⁶

As County Surveyor, Green made a report on the survey to the State Surveyor General, whose comment was: "The practicability of the work was fully demonstrated by the survey and it only remains to present the plan to the public in a form which will

secure profitable returns to secure construction."²⁷

Will attempted to gain public support by reminding farmers of the difficulties they had encountered in previous years, as is evidenced by this article that appeared in the *Sun* on December 10, 1864:

As the case now stands, there is no certainty for the farmer in this State, unless he brings to bear some artificial means to that end. We, of the Sacramento Valley, have been particularly unfortunate in this respect—having had as many as four failures in thirteen years, and four short crops. . . .²⁸

Despite his efforts, the proposed canal system that was estimated to cost \$350,000, received very little community support. It was eventually referred to the State Legislature for financing. Unfortunately, state officials determined that the canal should also be used for navigation purposes. The initially planned irrigation canal had now evolved into a great shipping canal—one hundred feet wide at the bottom—with the total estimated cost reaching nearly twelve million dollars.²⁹

The magnitude of such a project was beyond the resources of the state at that time and it was abandoned in 1866. The legislature did appropriate \$8,000 to cover the expenses of the survey. Green later stated that "they dropped my plan and the cost of their plan killed the project."³⁰

Undaunted by this first failure, Will Green remained committed to the cause of irrigation. Convincing the farmers of the increased yield that would result from the application of water to the soil proved to be one of the most difficult aspects of initiating an irrigation system. Although Green had the vision and foresight to comprehend the advantages irrigation could hold for the farmer, the majority of his contemporaries did not.

Many of the settlers were from the midwest where adequate summer rainfall made watering crops by artificial methods unnecessary. The fact that wheat, the predominant crop grown in the Sacramento Valley from 1867 to 1885, did not require irrigation if grown in the winter and harvested before the summer drought, did little to encourage their interest in irrigation.³¹ Will Green was one of

those individuals who recognized the fact that the wheat "boom" was exhausting the soil's resources and turned his attention to what could be accomplished with the use of irrigation.

For over forty years Will used the *Colusa Sun* to "instruct its readers in what irrigation has so profitably accomplished in other sections of the State."³² Through the *Sun* he endeavored to encourage the use of irrigation, as well as to dispel the misconceptions that abounded due to lack of knowledge.

Articles such as "Does Irrigation Injure Land?", "Cultivation vs. Irrigation," and "The Effects of Irrigation" were useful in convincing farmers that the application of water to crops could be used effectively. He used examples of farmers, who achieved much greater harvests by irrigating, to further stress his point. Green maintained that farmers lost enough in the dry seasons to finance some type of irrigation system, and after several dry seasons many farmers were beginning to have second thoughts about the possible merits of irrigation.

WHEAT FARMING



(Courtesy of Special Collections, Meriam Library, California State University, Chico)

A wheat harvest scene painted by Andrew P. Hill in 1878. It features the mammoth combination grain separator designed by George W. Hoag.

Prior to 1867, most agriculture took place within a mile or so of the rivers, where the water table was high. The plains, with their heavy clay content, were considered too difficult to work with the available equipment. The introduction of summer fallowing, along with the invention of the gang plow, altered agricultural methods in the Sacramento Valley and led to the planting of wheat and other grain crops on the lands previously considered useless.

Farmers learned that moisture could be preserved and the necessity of irrigation could be avoided if the land was allowed to lie

fallow for a year between crops. According to McGowan's *History of the Sacramento Valley*, this practice increased the yield so that "the farmer could get as much from half of his land every other year as he could if he planted all his land every year."

The development of the gang plow enabled one man and several horses to plow more land than had been considered possible by the previous generation. The method of planting is described by McGowan:

The farmer usually began his seeding after the first rains in November had made the soil easier to turn over. Then teams of three to

five horses pulled gang plows of two to six shares each over the fields. They were followed by a wagon on which a centrifugal sower had been set up, and which broadcast the seed over a strip thirty feet wide; the sower was followed by a horse-drawn harrow which covered the seed. In 1877 a seeder was attached to the gang plow so that the whole process was completed with one operation. In this manner, a farmer could plow and seed thirty to forty acres a day. (McGowan, page 247)

Wheat became essential to the valley's economy as it was an excellent "cash crop." It was in demand in both the United States and Europe; it was non-perishable and the introduction of railroads and other forms of transportation allowed it to be shipped to large markets around the world. With the opening of adobe lands in 1867, Colusa county became the leader of wheat acreage in the entire valley. By 1882 there were 400,000 acres of wheat planted, and Colusa was producing two per cent of the entire wheat crop of the United States. (McGowan, pages 244 & 245)

The wheat industry was dominated by large ranches; one of the largest in the state of California consisted of nearly 60,000 acres and was owned by Dr. Hugh Glenn. The Glenn ranch fronted on the Sacramento River for twenty miles and included 3,000 acres of timberland. Dr. Glenn purchased his first land in 1867, just as wheat was beginning to boom, and died only two years before the value declined.

Everything on the Glenn ranch was on an extensive scale. He had on his property 150 miles of fence, dividing it into seven main fields, the largest of which contained twelve

thousand acres. An article in the October 26, 1946 edition of the *Pacific Rural Press* indicates that Glenn's work force of 715 men was probably the largest of any farm in California at that time, and his payroll during the harvest was said to be \$30,000 a month. The main ranch was divided into nine individual farms run by either a foreman or a tenant, "each with its own dwelling house, barns, blacksmith shop, commissaries, cooks and servants." There were two large buildings which were used only to keep the machinery in operating condition, and fifty men and seven forges were kept in constant use during the winter and spring overhauling separators, steam engines, mowers and wagons." (*Pacific Rural Press*, October 26, 1946, p. 330)

The average yield of wheat on the Glenn lands was 25 bushels per acre in favorable seasons; with the annual total averaging a half million bushels of wheat per year. The 1892-93 Glenn County Edition of the *Willows Review* states that in 1880 Glenn was dissatisfied with the market price offered in San Francisco and chartered his own ships to transport the grain to England for the market; he shipped twenty seven thousand tons of wheat that year, and received nearly \$800,000 for it.

Dr. Glenn was murdered in 1883 and his heirs sold part of his holdings to pay outstanding debts and operate the ranch as it had been. But the days of wheat were gone and the Glenn ranch was finally subdivided and sold between 1902 and 1909, as were many other of the great wheat ranches.

With the advantages of irrigation being demonstrated repeatedly, the interest and controversy over irrigation became more widespread. The state legislature of 1872 passed an "act to promote irrigation by the formation of irrigation districts"³³ The act proved to be inoperable because it required 100% consent of all land owners in the district. This was impossible as the larger land-owners and those with riparian rights were generally opposed to this type of community endeavor and California law supported their

claims.

Irrigation committees were subsequently formed to devise some sort of legislation that would provide for the organization of irrigation districts. Will Green was one of those who actively participated in writing and lobbying for this piece of legislation throughout the 1870's and 1880's.

Colusa became the site of local irrigation meetings during the years 1875 and 1876. "W.S. Green, J.B. DeJarnatt, L.F. Moulton, Hon. John Boggs and other progressive indi-

Water Notice

Notice is hereby given by the undersigned that he desires and intends to appropriate the water flowing in the Sacramento River at the point at which this notice is posted, to wit; about 20 chains below the North boundary of Township 22 and east of the red land. That he claims the water therein flowing to the extent of five hundred thousand inches, measured under a four inch pressure. That the purposes for which he intends to divert it are as follows:

- I. Irrigating the lands of the Sacramento Valley east of the general course of a canal which he intends to construct, running from the river at this point as far West on the plains of Colusa County as the fall will permit: also to water the lands along the margin of the Sacramento River.
- II. For furnishing water for domestic purposes to people of towns and villages along or near its course and to people residing on farms.
- III. For furnishing water power for mills and all mechanical and manufacturing purposes.
- IV. For floating saw logs, timber, wood, lumber, boats, barges etc., etc. The places of intended use are the places hereinabove named.

That the means by which he intends to divert said water is a ditch which shall be sixty feet wide and 16 feet deep, at the river, going down to one or two feet below low water mark.

Done this 18th day of December 1883

N. D. Rideout

State of California }
County of Colusa }

W. S. Green being duly sworn deposes and says, that he did on the 18th day of December 1883, post a notice at the point designated in the above, and that the foregoing is a true copy of said notice.

Subscribed and sworn to
before me, this 21st Dec. 1883

W. H. Miles Notary Public

W. S. Green

viduals met to discuss the possibilities of irrigation."³⁴ They were agreed as to the advantages the use of water by that method offered, but were unable to privately finance any sort of system.

Many appropriative water rights were filed after these meetings, and irrigation was experimented with on a small scale by some individuals. For instance, John Boggs, George Packer and others constructed a ditch from the river, near Princeton, from which they irrigated their lands at time of high water. Several ditches were also constructed on Stony Creek during this period, but it was not until 1883 that anything on a larger scale was attempted.

Anticipating the passage of another irrigation district act, which provided political structure at local levels to pursue and finance irrigation projects, Will became one of the principal promoters in a project to bring water down from the upper part of Stony Creek to irrigate some of the valley lands. A corporation named the Stony Creek Canal Company was formed to carry out the construction with a capital stock of \$200,000.

Directors of the first year were: N.D. Rideout, John Boggs, W.P. Harrington, H.B. Julian, and W.S. Green.³⁵ N.D. Rideout was a well-known financier and banker from Marysville who had a reputation for investing in sound business enterprises.³⁶ His capital was an essential part of the operation and it was under his name that appropriative water rights were filed in 1883.

"Prior to 1914 an appropriative water right was established by posting a notice at the intended point of diversion which stated the amount of water to be diverted, the place of use and the purpose for which it would be used."³⁷ On December 18, 1883, Will S. Green posted the first water notice, on an oak located on the west bank of the Sacramento River, for the diversion of 500,000 miner's inches of water to be used for the irrigation of lands on the west side of the Sacramento Valley.

There was also a notice filed on Stony Creek at this time which called for the diversion of 15,000 miner's inches. Will Green refiled the Sacramento River appropriation the

following month, on January 30, 1884, most likely in an attempt to perfect the title to that water. With characteristic foresight, Green appropriated enough water to fulfill *any* future needs. The amount specified is greater than the flow of the river during the summer months and many times the present capacity of the Glenn-Colusa Irrigation District's pumping plant and main canal.

The actual construction of Stony Creek Canal began August 31, 1883. The proposed canal was to be fifty feet wide and would carry water at a depth of only three feet. It was estimated that this amount of water would irrigate 190,000 acres of land and, if the canal was eventually enlarged, it would be possible to irrigate an additional 200,000 acres. Construction was well under way when potential law suits with riparian owners, who feared that the diversion would prevent waters from flowing downstream during times of low flow, combined with the failure to obtain rights-of-way across private lands in many instances, compelled the promoters to abandon the project.³⁸

This defeat intensified Will Green's determination to remove the legal obstacles hindering the development of irrigation. The movement had acquired a great deal more support over the last decade as many farmers with land not adjacent to streams had been frustrated by riparian owners in their attempt to develop irrigation. The need to develop cooperative efforts was becoming an accepted and recognized fact.

A bill to be presented to the legislature was drawn up at an irrigation convention held in 1884 at Riverside. The bill passed the assembly, but was defeated in the senate by the riparian and large landholder interests.³⁹

Unwilling to accept defeat, the legislative committee of the irrigationists was determined that an irrigation act should be passed by the legislature in 1887. Towards this end they began a statewide publicity campaign in newspapers in an effort to gain more public support for such a measure.

A Modesto lawyer, Christopher Columbus Wright, who had done studies on irrigation and was familiar with the problems facing the formation of irrigation districts, was sent to the legislature in 1886, expressly for

the purpose of securing the passage of a law under which communities could build and operate their own irrigation works.⁴⁰ Wright was successful in pushing the bill through the legislature and it was signed into effect on March 7, 1887.

This law, which became known as the Wright Irrigation District Act, gave farming communities the right to form districts with powers similar to a municipality. A two-thirds vote of all property owners within the proposed district boundaries was required to

form an irrigation district. The electors could then bond all the land in the district to raise necessary funds for construction and rights of way. Trustees of the district were empowered to tax property owners involved, and assessments on land could only be removed by payment or sale of the land. The act also provided that compensation be paid to anyone with a prior right to the water being diverted.⁴² The passage of the Wright Act led to the organization of irrigation districts throughout the state.

THE WRIGHT ACT OF 1887

Briefly stated, this act sought to confer on farming communities powers of municipalities in the purchase or construction and the operation of irrigation works. Those powers included the right of eminent domain, the right to issue bonds against all of the real property within any area organized into an irrigation district, and the right to tax that property for the payment of the cost of any irrigation works acquired or built, and of their operation. "Fifty, or a majority of freeholders owning lands susceptible of one mode of irrigation from a common source, and by the same system of work," were authorized to propose the organization of an irrigation district before the board of supervisors of the county in which the lands included should be located. All electors in the area included were allowed to vote at district elections, but it was provided that at least two-thirds of all the votes cast at bond elections should be favorable to organization in order to carry it, that a majority of all the votes cast at bond elections should approve the bonds submitted before they could be issued, and that two-thirds of all votes cast at elections on special assessments should approve such assessments before they could be levied. Full provision was made for the conduct of district elections, for meetings of boards of directors, and for their management of district business, for the issuance and sale of bonds, for the levying, equalization, and collection of assessments, including the sale of property for district taxes and its redemption within twelve months from date of sale, for the adoption of plans of works and for their construction, for the payment of all district expenses, etc. Boards of directors were given full authority to call special district elections on both the questions of issuing bonds and of levying of special assessments. District bonds were made payable in installments from the eleventh to the twentieth year after issue and were to bear interest at the rate of six per cent, and it was provided that bonds should not be sold for less than ninety per cent of their face value. In short, the act sought to clothe farming neighborhoods desiring irrigation with full authority at law to acquire by condemnation or otherwise all water rights and irrigation works that a majority of the freeholders and two-thirds of the electors voting in any district election in such neighborhoods should decide in favor of, with the taxing power of the state conferred upon such neighborhoods for financing their acquirement and operation.

Meetings were held at Maxwell in March and April of 1887 to take the necessary steps toward forming an irrigation district. On April 22, a committee consisting of G.M. Sutton, E.P. Eakle, P.R. Garnett, G.F. Packer, G.B. Harden and W.P. Harrington was appointed to make the necessary arrangements for a survey of the proposed district and prepare a petition to be presented to the County Board of Supervisors by the landowners of the district.⁴²

The 1864 survey done by Green and Bender had been resurveyed in 1884 after the

Stony Creek Canal Company failure. W.F. Luning, the surveyor of Tehama County, had assisted Green in extending the survey to the foothills near Maxwell at that time.⁴³ At the request of the irrigation committee, Green immediately proceeded to outline the boundaries of an irrigation district based on his previous surveys. The district outlined in the Green and Cosner survey of 1887 was to contain 156,500 acres of land.⁴⁴

Once the survey was completed, the committee's next step was to prepare a petition to be presented to the County Board of Supervisors. The law required that the signatures of at least fifty landowners within a proposed district be obtained in order to initiate the formation of an irrigation district. Sixty-four landowners eventually signed the petition that was presented to the Colusa County Board of Supervisors on October 10, 1887.⁴⁶

The organization of the district was bitterly opposed by nine large landholders, each of whom owned thousands of acres within the proposed boundaries. These men were still engaged in the extensive grain growing that had boomed in the previous decade and were opposed to the construction of irrigation works. They objected to having their large landholdings taxed and assessed for the purpose of building public irrigation works. These landholders opposed the plan for many reasons, some of which were based on the idea that grain lands did not need irrigation, that irrigation would be detrimental to health and alkali soils, and it was even suggested that irrigation produced inferior fruit.⁴⁸

A. Montgomery, Jefferson Wilcoxson, J.C. Stovall, F. Quint, Peter J. Seiple, H.H. Quint, J.S. Gibson, J.F. Able and Wm. Motaux filed objections to further proceedings in the matter of organizing the district, and moved that the matter be dismissed in hearings held by the Board of Supervisors throughout October of 1887.⁴⁹

After hearing testimony of both the irrigationists and the opposing landowners, the Board of Supervisors ordered an election upon the formation of the Central Irrigation District, to be held on November 22, 1887. The Central Irrigation District was established by a vote of 271 for and 51 against, becoming the fourth irrigation district to be organized

NAMES FROM PETITION OF ORGANIZATION CENTRAL IRRIGATION DISTRICT

- | | |
|--------------------------|------------------------|
| 1. Geo. M. Sutton | 33. A.W. Rickey |
| 2. D.T. Scoggins | 34. A. Rummelsburg |
| 3. W.H. Brown | 35. J.N. Miller |
| 4. Geo. B. Harden | 36. John J. Skinner |
| 5. W.S. McCoy | 37. Harry Munson |
| 6. W.N. Taylor | 38. D.R. Matheson |
| 7. S. Pence | 39. S.C. Park |
| 8. H.E. Cooper | 40. W.P. Harrington |
| 9. J.R. Sutton | 41. John T. Harrington |
| 10. W.F. Mason | 42. J.B. DeJarnett |
| 11. Wm. C. Murdoch | 43. J.A. Constable |
| 12. Thos. P. Harden | 44. Thos Dealy |
| 13. James McDermott | 45. J.A. Sutton |
| 14. G.M. Dollarhide | 46. John Connors |
| 15. J.W. Cook | 47. M. Moynihan |
| 16. C. Lindstrom | 48. Fredrick White |
| 17. J.F. Durham | 49. C.S. Dennis |
| 18. W.A. Putney | 50. M.J. Rouke |
| 19. C.C. Simpson | 51. Henry Moutox |
| 20. E.E. Scott | 52. C.M. Long |
| 21. P.R. Garnett | 53. B.F. Scott |
| 22. Wm. F. Baker | 54. J.M. Darnell |
| 23. Mark Hubbard | 55. John F. Fouch |
| 24. Chas. Buster | 56. A.J. Smith |
| 25. E.B. McDow | 57. R.B. Wallace |
| 26. C.W. Mattatall | 58. A. Schaad |
| 27. T.B. McDow | 59. E.N. Kimball |
| 28. F. Scriver | 60. J.W. Woodland |
| 29. S.H. Lagenour & Sons | 61. J.C. Bedell |
| 30. William Lewis | 62. Kate Hunter |
| 31. J.P. Rathbun | 63. W.H. Miles |
| 32. J.R. Gordon | 64. Frank McDermot |

(Endorsed) Petition for the formation of an irrigation district, Central Irrigation District filed Oct. 10, 1887—S.M. Bishop, Clerk. By J.L. Seawell, Deputy Clerk.

under the Wright Act.⁵⁰

The first directors of the Central Irrigation District, F.X. St. Louis, H.B. St. Louis, J.A. Sutton, R. DeLappe and A.J. Tully, met on January 23, 1888, for the purpose of appointing C.E. Grunsky chief engineer and W.S. Green assistant engineer of the Central canal system.⁵¹

Grunsky prepared plans and estimates for the irrigation system which closely followed the plans prepared by Green years before. The district plan was to divert water from the Sacramento River at the site of the 1883 water rights filing, conveying water to all the lands included in the district by means of a main canal with branch canals and laterals.

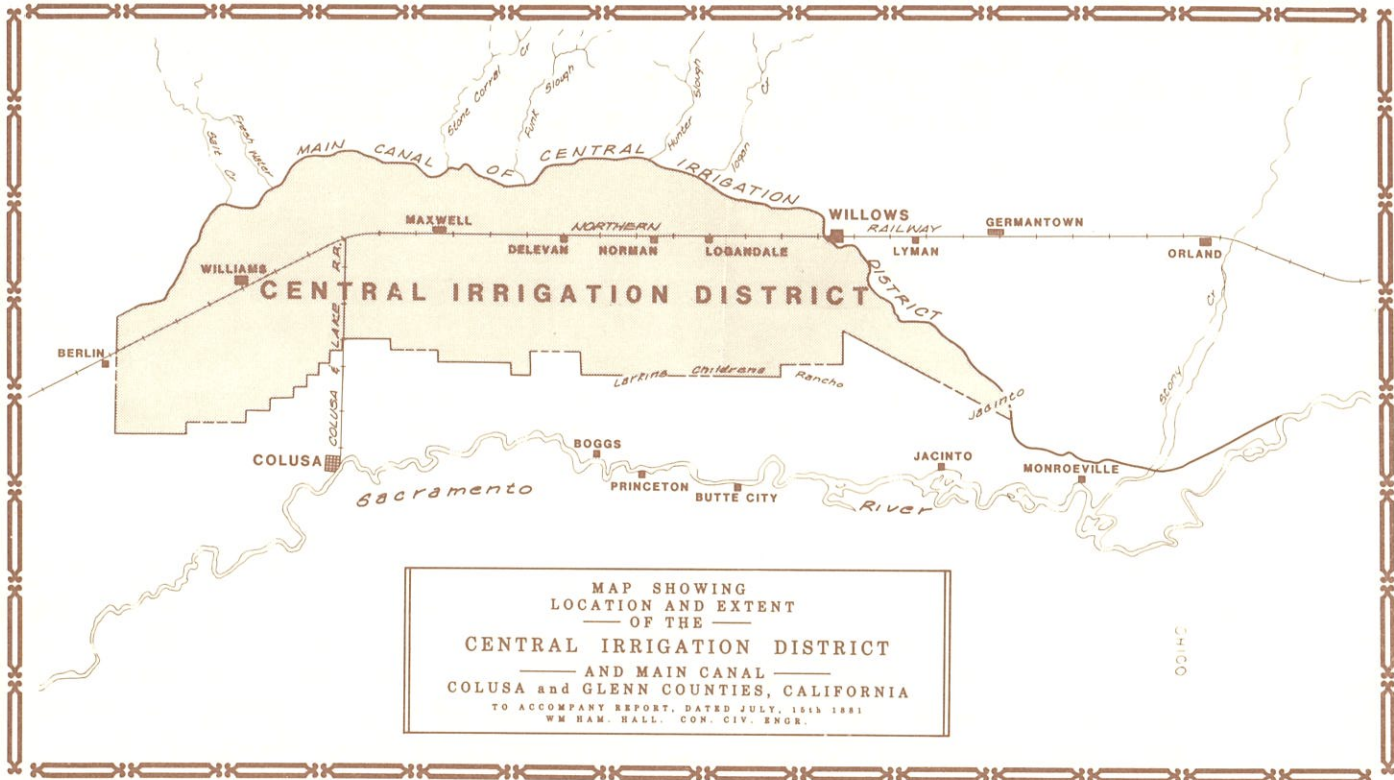
The main canal was designed to run through what was then Colusa county (the northern portion becoming Glenn County in 1891) in a southerly direction, bearing to the southwest and crossing the railroad tracks just south of Willows. About six miles southwest of Willows, the course resumed its southerly direction following the foothills past the town of Maxwell and to a point about halfway between Williams and Arbuckle, where it intersected with Cortina Creek. The canal was to carry water at a depth of six feet, would

have a bottom width of sixty-five feet, and a total length of nearly sixty-two miles.⁵²

Once the plan was adopted, the question of bonding the district to raise money for the construction of the irrigation works was presented to the electors of the district. On April 2, 1888, a bond issue of \$750,000 (to cover the estimated construction cost of \$638,900) was authorized by a vote of 189 to 36.⁵³

These bonds were to be issued for twenty years, with an interest rate of six per cent, payable semi-annually. The bonds, dated July 1, 1888, were to be redeemable in installments at the end of the eleventh year and every succeeding year thereafter, until final maturity.⁵⁴

The opposing landowners resisted the formation of the Central Irrigation District every step of the way. They challenged the validity of the district by questioning the constitutionality of the Wright Act, asserted that all lands included within the district were not irrigable by the same source, and disputed the boundaries of the district. The validity of the bond issue was also promptly challenged in the courts, and it was not until May of 1889 that the Supreme Court sustained the district and approved the bonds.⁵⁵

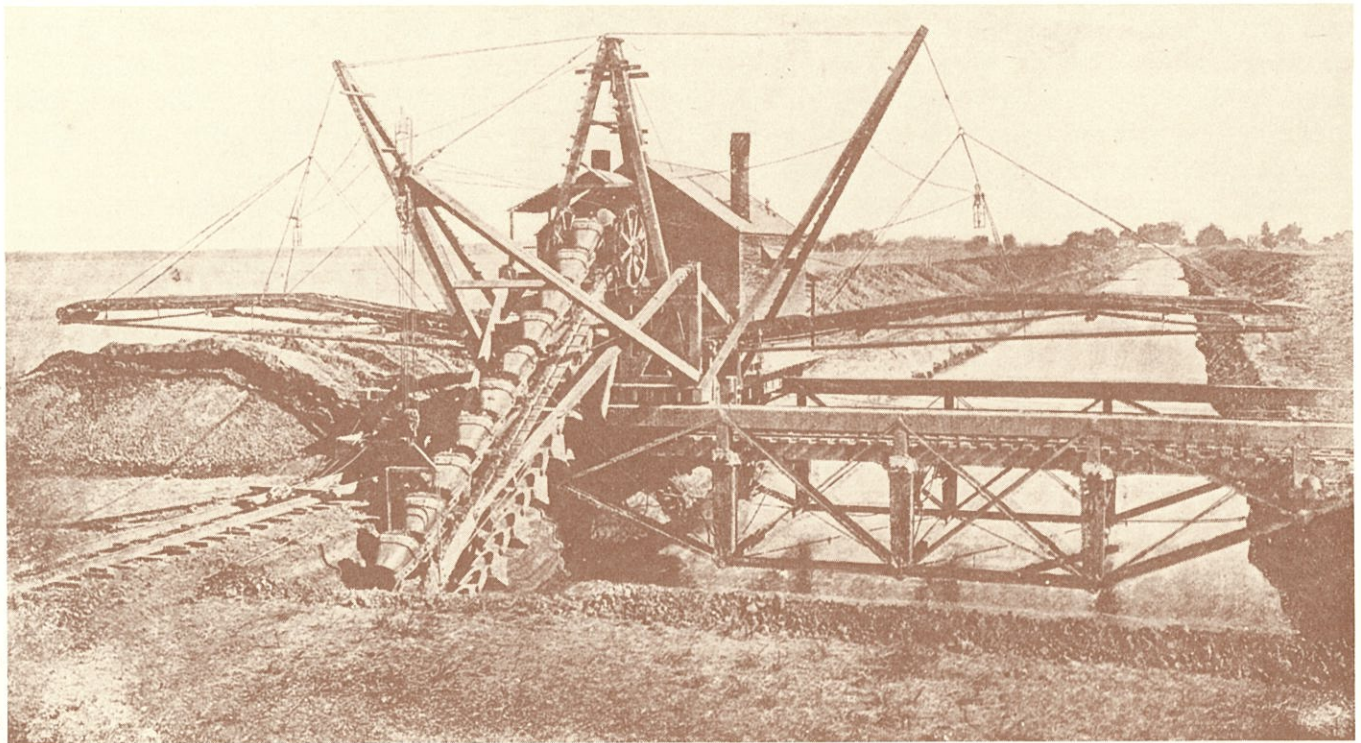


Map of the Central Irrigation District, published in the Colusa Sun, 1891.

For the next few months Green devoted himself to selling the bonds. He traveled as far as New York to accomplish this, paying his own expenses on a monthly salary of \$150. As superintendent of construction he aided in dealing with contractors and securing rights

of way for the canal. Finally, on November 9, 1889, a ground breaking ceremony for the construction of the Central Canal was held at St. John. Will Green presided over this function, dragging a plow through the right of way.⁵⁶

SAN FRANCISCO BRIDGE COMPANY EXCAVATOR



Steam canal excavator working on Central Canal—Designed, built and operated by the San Francisco Bridge Company.

The San Francisco Bridge Company was granted the excavation contract at 17 $\frac{3}{4}$ cents per cubic yard. The company designed and built a large ditching machine, weighing seventy-five tons, specifically to perform this work. It was the largest machine constructed on the Pacific Coast at that time, and cost over \$50,000. It was said to be more efficient and powerful in excavating than any machines used on the Panama Canal.

The excavation machine consisted of a chain of twenty-three large bucket-shaped scoops which revolved on reels while being filled with earth. The dirt was emptied on long drapers (conveyor belts) that carried it

to either bank of the canal. A 200-horsepower engine propelled the machinery, which rested on a 108-foot truss, across which it moved by steam power on massive car wheels. The truss also moved by steam along the course of the canal, on railroad tracks placed along each side.

An electric light plant consisting of eight arc and eight incandescent lights, made it possible to operate the machine night and day. A crew of thirty men during the day and twelve at night, was able to excavate about 4,000 cubic yards of earth in a twenty-two hour period, which was estimated to be the equivalent of the labor of 400 men.⁵⁷

The opponents of the district, whose numbers had increased, continued their campaign to halt the canal, even after the bonds had been issued and construction was under-way. Investment houses and banks were strongly urged not to buy the bonds. Many districts created under the Wright Act were failing due to weaknesses in the law, which meant that irrigation district bonds began to be considered as bad investments. It became extremely difficult for Will Green to dispose of any Central Irrigation District bonds. They were primarily used to pay the contractors, who ultimately refused to accept them when the market became so sluggish.⁵⁸

Numerous law suits were brought against the district in both state and federal courts in an attempt to prevent the collection of district taxes. Litigation over the right-of-way for the canal was also a serious obstacle. Contracts for the construction of the canal had been let before the rights-of-way had been secured from the property owners in many instances, which meant that a decision in favor of the district was necessary, or that the canal must be relocated.

While litigation was pending, gaps were left in the main canal in some places. A distance of about six and a half miles across the Glenn estate was not constructed because of inability at that time to secure the right-of-way.⁵⁹

As a result of these obstacles Green was unable to dispose of more bonds. In November 1891, for lack of cash and credit, all work on the canal was suspended, just two years after it had begun. At this time about forty miles of the planned sixty-one mile canal had been excavated from a few miles south of Maxwell north to about a quarter of a mile from the point of diversion at the Sacramento River.⁶⁰ The system was not continuous, with the largest uncompleted gap being the six and a half mile portion in the Glenn estate. Those portions of the canal that were ready to receive water were prevented from doing so because the headgates had not yet been constructed.⁶¹ It was apparent to all those involved that additional concerted action and an alternate source of funding was absolutely necessary if the Central Irrigation District was ever to reach completion.

Will Green's frustration over this turn of events was expressed in the *Colusa Sun* on September 12, 1891:

... if Central District, with all its start, should possibly be defeated, and prove that the people are incapable of owning anything, and that even water—an element without which there can be neither animal or vegetable life, must be the property of superior order of man—it will be the bitterest disappointment of our declining years.⁶²



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4. Joseph McGowan, *History of the Sacramento Valley*, (New York: Lewis Historical Publishing Company, 1961), p. 14.
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7. "The Sacramento Valley as Will S. Green Saw It In 1850," *Wagon Wheels*, Volume XVI, Number 1, (June 1966), p. 14.
8. Justus H. Rogers, *Colusa County - Its History and Resources*, (Orland, California, 1891) Volcano, California: Reprinted by California Traveler, 1970), p. 346.
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12. McGowan, pp. 263-264.
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18. Rogers, p. 348.
19. *Ibid*.
20. Rogers, p. 348.
21. Rogers, p. 348.
22. "The Sacramento Valley As Will S. Green Saw It in 1850," *Wagon Wheels*, June 1966, p. 14.
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27. John P. Ryan—"Notes on Early History of the Canal System of Glenn-Colusa Irrigation District," p. 1.
28. Will S. Green, "The Great Ditch Project," *Colusa Sun*, December 10, 1864, p. 2, col. 2.
29. Charles Davis McComish, *History of Glenn and Colusa Counties, California*, (Los Angeles, California: Historic Record Company, 1918), p. 97.
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31. McGowan, p. 268.
32. Rogers, p. 351.
33. Frank Adams, *Irrigation Districts in California*, State of

- California, Department of Public Works, Bulletin No. 21, (Sacramento: California State Printing Office, 1929), p. 5.
34. McComish, pp. 225-226.
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 36. Peter J. Delay, *History of Yuba and Sutter Counties, California*, (Los Angeles, California: Historic Record Company, 1924). pp. 1188-1189.
 37. Minasian, p. 2.
 38. Rogers, p. 202.
 39. McGowan, p. 392.
 40. Adams, p. 7.
 41. McGowan, p. 393.
 42. Rogers, p. 232.
 43. "Will S. Green's Dream Continues to Unfold," *Willows Daily Journal*, November 5, 1962.
 44. Rogers, p. 340.
 45. McGowan, p. 384.
 46. "Will S. Green's Dream Continues to Unfold," *Willows Daily Journal*, November 5, 1962.
 47. W.H. Chamberlin, *History of Central Irrigation Canal*, (San Francisco, 1911), Section A-4.
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 49. Chamberlin, Minutes of Board of Supervisors, October 10, 1887, Section B-1.
 50. Rogers, p. 237.
 51. Chamberlin, CID Board of Directors Minutes for January 23, 1888, p. 1.
 52. Rogers, p. 340.
 53. Adams, p. 12.
 54. Rogers, p. 340.
 55. "Will S. Green's Dream Continues to Unfold," *Willows Daily Journal*, November 5, 1962.
 56. Rogers, p. 254.
 57. Rogers, pp. 340-341.
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The Stony Creek Survey

Central Irrigation District was by no means the only irrigation project to experience difficulties under the Wright Act. In addition to opposition from the large landholding interests, difficulties in the law itself resulted in the failure of the majority of these early irrigation districts. Only a few of the forty-nine districts proposed under the Wright Act ever reached completion.¹

The Wright Act had been designed to enable farmers with land located away from water supplies to receive water for irrigation, thereby increasing the productivity of the land. This law was vigorously opposed by large landholding interests throughout the state. Many large landholding corporations had purchased land for speculation rather than development, and had no intentions of cooperating in financing community irrigation projects. Large private landowners objected to sharing their riparian rights with others, and particularly resented the fact that they would have to provide most of the money for the districts, as they would be taxed according to the size of their holdings. These interests immediately challenged the constitutionality of the Wright Act, but it was declared constitutional in May 1888.²

Although the amount of litigation involved in the organization of the early irrigation districts was a serious impediment, it was the financing provision of the Wright Act that ultimately led to the failure of many districts. Construction of these projects was to be financed by the sale of bonds, with the provision that the bonds could not be sold for less than 90% of their face value. When

all the irrigation districts created under the Wright Act "dumped their bonds into the market at about the same time, the value of the bonds decreased below the 90%, and so could not be sold."³ Potential investors were hesitant to invest under these circumstances, and many irrigation districts were unable to continue financing their projects.

Another weak point of the Wright Act was the fact that professional management was not required for newly formed districts. Individuals with relatively little legal or financial experience were often placed in charge of these projects and expected to manage huge sums of money without any rules to guide them. "Consequently, they were frequently accused of 'extravagance, incompetence and failure to select the best projects.'"⁴

The Central Irrigation District suffered as a result of all of these problems. The litigation surrounding the creation of the district was formidable. A prominent San Francisco attorney, W.H. Chamberlin, was hired to represent the nine large landowners who most actively opposed the organization of the district. Chamberlin represented these landowners (who did not reside within the district boundaries) for several years, contesting the formation of Central Irrigation District on any possible grounds. Although the court cases were a hindrance to the district, it was not until Green found it impossible to dispose of any more bonds that construction of the canal was suspended in 1891.

Green refused to accept defeat and in an effort to educate and convince the bankers of the soundness of irrigation bonds, he pro-

ceeded to arrange for the State Engineer, William Hammond Hall, to make a full report on the district.⁵ He also used the *Sun* to try to urge the members of the community to become involved and not let this work go unfinished, as can be seen in this article, dated December 24, 1892:

. . . There is not a business man in the world who will say that there is any sense or business in spending \$570,000 in a work, and quit it when almost completed, and let the work go to rack for want of care. It looks to us that the action amounts almost to a crime. But the other side, the men who believe that the work will be beneficial, sit still and allow it. We deplore it but can do nothing.⁶

W. H. Chamberlin, the attorney representing the opposing landowners, did not let the fact that irrigation districts were, as a rule, organized by people unfamiliar with large scale business management, escape his attentions. His assessment of Green's management illustrates this point:

Anyone who knew him realizes that he was a man with tremendous push and energy, with strong will, convictions and opinions; just such a man as would endeavor to push through his gigantic irrigation project without paying much attention to the fine points of law involved in the organization of the district or in the "paper work" of the acts and proceedings in such an organization. He was not of the "make-up" to be a close calculator on the business side of a large project.⁷

Unfortunately his assessment proved to be correct. Central Irrigation District was ultimately invalidated as a consequence of a legal technicality. The district had initiated confirmation proceedings in 1893 in an effort to clear up the legal technicalities surrounding the district and thus stimulate bond sales. The Superior Court granted the confirmation, but the decision was immediately appealed to the Supreme Court by the opposing landowners.

The Supreme Court ruled that the "organization proceedings of the district were illegal and null and void,"⁸ as the 1887 Petition for Organization had been improperly signed. The signatures on the petition had not been limited exclusively to agricultural landowners

as required by the law, but had included some signatures of individuals who merely owned town property and lots. This oversight on the part of those who submitted the petition was all the opposition needed to defeat the district decisively. The decree, rendered March 1 1902, was never appealed. Those opposing the Central Irrigation District, since the passage of the Wright Act, had finally prevailed.⁹

Despite the fact that Central Irrigation District had overcome many major obstacles over the course of the years and was the only district of the five proposed in the area (Orland, Kraft, Orland Southside and Colusa) to come so close to completion, it was a fine point of the law that eventually destroyed all hopes of its completion under the Wright Act.¹⁰

The story of irrigation under the Wright Act had been one of frustration as so few of the proposed districts succeeded. In the light of experience the weak points of the law were recognized, and important amendments to the Wright Act were adopted in 1889, 1891, 1893, and 1895. In 1897 it was enlarged, rewritten and reenacted as an entirely new law, the Bridgford Act, which also became known as the Irrigation Act of 1897.¹¹

The Wright Act should not be considered a failure even though the majority of the irrigation districts organized under it were not successful. The amount of publicity which accompanied the passage of the act and the organization of the districts stimulated widespread interest in irrigation. The public was beginning to recognize the widespread economic benefits to be gained from irrigation as it meant that land previously considered as useless could be utilized for farming.¹²

The value of land was greatly increased with some type of irrigation. The introduction of orchard growing to California had demonstrated that high yields could be grown on relatively small acreages. The orchard crops were in great demand in other parts of the country and the completion of the transcontinental railroad in 1869 provided an efficient and rapid method of shipping crops.

The Southern Pacific Railroad had hundreds of thousands of acres of land along its routes and was anxious to dispose of these lands to farmers. This served a dual purpose

as the farmers would pay for the land and then eventually would pay to ship their produce on the railroad, resulting in double profits for the railroad. An extensive advertising campaign, which glorified life in California, was financed by the railroads. Many people from the eastern United States were persuaded to immigrate to California on the basis of these advertisements. The price of a train ticket was only \$5.00 in 1886,¹⁴ with Southern California becoming the principal site of a great land "boom" during the 1880's. A great deal of activity centered around the promotion of irrigation with many of the immigrants purchasing small tracts of irrigated land in order to obtain the highest yield possible from the soil.

The advantages to be had in California were being widely recognized throughout this period, and Will Green continued his efforts on behalf of the Sacramento Valley. He had advocated the use of irrigation and the development of other types of crops throughout the prosperous grain-growing years. In his 1880, *History of Colusa County*, he had written:

Farming has progressed satisfactorily . . . except that too much dependence is placed on wheat, which is the staple crop of the county. While Colusa is foremost in this staple she is deficient in orchards, vineyards and such other crops as are found profitable in other portions of the state.¹⁵

Green had repeatedly warned the wheat farmers that the constant farming of the lands of the plains would inevitably exhaust the soil's resources. Crop yields became increasingly light throughout the 1880's, and the previous demand for grain disappeared with the advent of the railroad. Many grain-growers were forced to turn to other types of agriculture, such as stock raising.

The 1890's brought a mild depression with low prices for agricultural products. Agriculture was not as lucrative as it had once been. The decline in the grain market made switching to other crops vitally important, but the lack of irrigation systems made it increasingly difficult to grow a profitable crop.

An exceptionally dry season in 1898 resulted in hundreds of Sacramento Valley far-

mers forsaking agriculture and migrating to the cities. Will Green felt that some type of concerted action was necessary to attract newcomers to the area and to lobby for the development of the valley.¹⁶

He personally visited the Boards of Supervisors of all the counties in the valley in an attempt to establish a permanent organization.¹⁷ He succeeded, and on January 15, 1900, the representatives of the counties of Tehama, Glenn, Sutter, Butte, Yolo, Sacramento, Solano, Yuba and Colusa convened in Woodland to organize the Sacramento Valley Development Association.¹⁸ They pledged "to promote the best interests of the valley through political action and advertising."¹⁹

The formal address given at this convention presented the Association's goals and priorities. The importance placed on the development of irrigation is evident.

We find the first condition challenging our attention is that of water. We have in the Sacramento Valley large quantities of land susceptible of becoming as fertile as any on the globe if it can be properly irrigated. . . . We therefore pledge ourselves to take all proper measures for the irrigation of the Sacramento Valley. . . .²⁰

The Sacramento Valley Development Association also proposed to "disseminate, as far as possible, information concerning our resources to the people of the United States and Europe, as well as educating our own people as to the extent of the vast resources which they possess and the best way to make them available."²¹ The improvement of roads, and the conservation of the forest and streams were other concerns mentioned in the Association's January 15, 1900, address.

The Association had decided to make its first contribution to the valley by using its influence to interest federal agencies in irrigation. Will Green had cited Stony Creek as the stream whose water would be easiest to divert and apply to the land, and therefore the most likely to receive some sort of assistance from the federal government.

Frank S. Reager was appointed "chairman of the Committee for Survey of Cache and Stony Creeks, and raised funds for the local contribution for the Survey of Stony Creek."²² The committee succeeded, and the U.S. Geo-

logical Survey sent agents to locate and map sites for storage reservoirs, "and thus was started the study of water control problems of the Sacramento Valley."²³

Each county belonging to the Sacramento Valley Development Association contributed a small amount of money to cover the expenses of the organization. One of the primary expenditures was the advertising campaign used to encourage immigration to the valley. During the early 1900's the Association placed advertisements in *Sunset*, *Out West*, and other magazines catering to the west.

Come to the

SACRAMENTO VALLEY CALIFORNIA

TEN THOUSAND MEN will be needed

To Harvest

the immense Fruit, Grain and Hop crops in the SACRAMENTO VALLEY this season.

Industrious, thrifty young men from the agricultural districts of the East will find this the best year to come to CALIFORNIA and the great SACRAMENTO VALLEY.

Five months of steady employment in harvesting the crops is assured, with continuous employment all the year to those who desire it.

**THE SACRAMENTO VALLEY PAYS THE BEST WAGES
OF ANY DISTRICT IN THE STATE OF CALIFORNIA**

For more complete information address any of the following Vice-Presidents of the Sacramento Valley Development Association:

J. W. KAERTH	Colusa County	Colusa
MORRIS BROOKER	Sacramento County	Sacramento
C. W. THOMAS	Yolo County	Woodland
H. P. STABLER	Sutter County	Yuba City
RALEIGH BARCAR	Solano County	Vacaville
R. M. GREEN	Butte County	Oroville
P. R. GARNETT	Glenn County	Willows
C. P. FOSTER	Tehama County	Corning
J. H. WILLS	Placer County	Auburn
J. J. CHAMBERS	Shasta County	Redding
J. M. WALLING	Nevada County	Nevada City
E. A. FORBES	Yuba County	Marysville
W. C. GREEN	El Dorado County	Georgetown
S. H. HILL	Siakiyou County	Sisson
W. S. GREEN, President	Colusa County	Colusa
F. E. WRIGHT, Secretary	Colusa County	Colusa

Sacramento Valley Development Association Advertisement as it appeared in the November 1902 issue of Sunset Magazine.

(Reprinted from Sunset Magazine, courtesy of Lane Publishing Company)

Green also wrote articles extolling the virtues of the Sacramento Valley which appeared in these publications. An article published in the April, 1902, *Sunset*, "California's

Inland Empire—The Sacramento Valley" presented a flattering description of the valley and included pictures of orchards, crops and other vegetation. Green stressed the importance of agriculture to the area, and the major contribution that irrigation would make to the production to the valley.²⁴

As President of the Sacramento Valley Development Association in 1905, Will Green's last public activity was escorting a congressional committee on irrigation through the state. The publication of the Stony Creek survey by the United States Geological Survey in 1901, had eventually drawn national attention to the feasibility of irrigation projects located in northern California. At the close of the tour and final meeting at the banquet in Red Bluff, Green was introduced as "the Patriarch of irrigation in the Sacramento Valley." Speaking briefly he concluded his address by saying:

Doing my own engineering and paying my own expenses, I located the present central canal and prophesied this work, and now I find that the United States will take years to go ahead, and feel how small have been my efforts. But, gentleman, my only hope, as I am on the decline of life, is that some day I may stand on Pisgah and see a Promised Land for God's people in this valley, and then I will be ready to die."²⁵

Although Will Green had devoted over fifty years of his life to designing, engineering and promoting the Central Canal, he did not live to see water running through it. He died on July 2, 1905, before his dreams were realized. J.B. DeJarnatt, a contemporary who had worked with Green on behalf of irrigation, wrote a tribute describing the character of this great man, which was printed as an editorial shortly after Green's death.

I can only say, after a close and intimate association with General Green extending over a period of forty years, that he was the most unselfish man I ever knew. Plain and unpretentious of manner, abounding in human sympathy, he was essentially a man of the people. He was a representative California citizen with exalted ideas of the obligations which citizenship imposes. He was a man to be trusted in any emergency; he was unfaltering in his loyalty to any cause he espoused; he was firm to faultlessness in his friendships;

he stood squarely upon his merits as a man in all the relations of life. The State of California has lost in General Green a friend whose place cannot be filled."²⁶

The cause of irrigation lost its most ardent supporter with the death of Will Green, but others had recognized the need for a local irrigation system and continued his work, even before his death. The Central Irrigation District had been lying dormant for ten years, when Byron De la Beckwith of Colusa, conceived a plan that would utilize the Central Canal, although he did not live to see it implemented. He proposed to run water to the district lands, as well as to the lands along the Sacramento River in Glenn and Colusa counties, by private enterprises. As early as November 30, 1901, Beckwith filed water appropriations on the Sacramento River at the intake of the Central Irrigation District, for the diversion of 150,000 miner's inches to be used for irrigation. J.B. DeJarnatt and Ernest Weyand, both of Colusa, were present as witnesses.²⁷

Beckwith had great plans for the canal system and apparently tried to allow for every contingency. The amount of water he appropriated was also enough to fulfill *any* future needs, as it is greater than the natural flow of the river during the summer months.²⁸ The places of use he designated covered every possibility by including Glenn, Colusa, Yolo and Solano counties. The water was to be used to "furnish water for irrigation, domestic purposes, motive power, and for all purposes for which water may be used." This was further broadened by adding "and for all purposes incident thereto," and just to allow for any eventuality the phrase, "and incidentally for all legitimate purposes" was added.²⁹

He began work in a small way, but was unable to finance the project himself. He began looking for financial backing and in September of 1902 he entered into a contract with Willard M. Sheldon and James D. Schuyler, "two men who represented that they would interest capital in the canal enterprise."³⁰ The plan was to obtain a lease from the Central Irrigation District for the existing portions of the Central Canal and complete the construction of the canal to the river intake. According to the agreement, Beckwith would grant

the use of his 1901 water rights filing, and assist in the negotiations for the lease of the Central Canal, in exchange for which he was to receive one-third of the stock of the company to be organized by Sheldon, Schuyler, and backers. The company was to be known as the Sacramento Canal Company.³¹

The de facto Board of Directors of the Central Irrigation District reconvened on December 10, 1902 and decided to lease the existing properties of the district. Notices of intent were published in the *Williams Farmer* and the *Willows Semi-Weekly Journal* that month, and on January 6, 1903, the board met to lease the works to Willard M. Sheldon. The lease was for a period of fifty years, at an annual rental fee of \$25, with the stipulation that the Central Canal be completed and water furnished to the lands in the district.³²

Sheldon and his associates immediately organized and incorporated a company to carry out the terms of the lease. In February of 1903 Sheldon assigned the lease of the Central Irrigation District facilities to the new company, the Central Canal and Irrigation Company.³³ Additional water appropriations were made on behalf of the Central Canal and Irrigation Company by Willard Sheldon, and his brother, M.N. Sheldon.

On the 25th of February Willard Sheldon posted a notice for the diversion of 5,000 cubic feet per second from the Sacramento River, at approximately the site of the 1901 Beckwith posting. M.N. Sheldon posted a notice for the diversion of 5,000 cubic feet per second on Stony Creek, at the point it intersected with the Central Canal, on April 15, 1903. Both these notices listed the designated place of use as the counties of Glenn, Colusa, Yolo and Solano. A later filing made in the name of the Central Canal and Irrigation Company, on November 13, 1903, claimed the diversion of 5,000 cubic feet per second from the Sacramento River, for use only in the counties of Glenn and Colusa. The plans of the company had altered rapidly from those originally made with Byron De la Beckwith and this did not escape his attention.³⁴

Beckwith protested the fact that the company had not been named as stipulated in the contract he had signed, that additional water rights had been filed in the same location as

The year 1906 was important for the Central Canal and Irrigation Company as two major events took place. The Central Canal and Irrigation Company had their attorney, Frank Freeman, file a bill with Congress, requesting the right for the company to divert up to 900 cubic feet per second from the Sacramento River. This was done in order to perfect title to the water rights of the company, under both federal and state laws, and to insure that water would always be available during the irrigation season. The War Department had control of the Sacramento River as it was considered to be a navigable river to a point below the diversion of the irrigation company. Unless Congress granted the right for the company to divert water from the Sacramento River there was always a chance that the War Department could shut off that diversion at a crucial point during the irrigation season. This unique bill granting the company the right to divert 900 cubic feet per second from the Sacramento River was passed by Congress and signed by President Theodore Roosevelt on April 16, 1906.³⁹

The other significant event to take place that year was the installation of a pump on the southerly bank of the Sacramento River. "For three years, 1906, 1907, and 1908, the Central Canal and Irrigation Company conducted water through the main canal and river branch canal to whomever cared to purchase it."⁴⁰

Unfortunately, the Central Canal and Irrigation Company was beset by some of the problems that had plagued the old Central Irrigation District. Financial difficulties were experienced for several reasons. The constant litigation the company was involved in was a drain on the available capital. The Beckwith case was tried in 1905 by the county Superior Court, with the decision rendered against the Beckwith claims. The case was appealed and reversed, which led to its being referred to Yolo County for re-trial.⁴¹ The chances of the case being decided in favor of the Beckwith interests became a real possibility which could eventually cost the Central Canal and Irrigation Company thousands of dollars. This, along with the discovery of an engineering error, which necessitated an expensive change of plans, made additional

capital vital to the survival of the company.⁴²

FACT OR THEORY?

Charles F. Lambert, who was involved with the affairs of the irrigation district for many years, worked for the Central Canal and Irrigation Company during this period. He was hired as a surveyor and engineer in November 1907, shortly after his arrival in Willows. The company was in such severe financial straits at that time that its only other engineer was the chief engineer, Jubal Weston. Lambert explained in depth the error discovered by the Central Canal and Irrigation Company when it undertook the opening of the canal into the Sacramento River, which necessitated a costly change in plans.

C.E. Grunsky, the chief engineer for the Central Irrigation District, had apparently erred in his calculations when establishing the grade line of the canal. He fixed the initial grade of the canal six feet *above* the average low-water flow of the Sacramento River, which meant that "water would not flow into the canal by gravity during the low-water months," but would have to be lifted with the use of pumps.

Lambert attributed the error to the fact that Grunsky had previously worked on the San Joaquin River, and had assumed that run-off from rainfall and snow melt would occur at approximately the same time on both rivers. Regrettably enough this was not the case. The run-off pattern of the two rivers are quite different. Much of the San Joaquin River's run-off originates from snow melt in the High Sierra, reaching its peak in June and continuing until late summer. On the Sacramento River, however, snow melt is not a major factor as run-off peaks during the rainfall season and is not sustained by snow melt.

As a result of this mistaken assumption, Grunsky predicted higher flows on the Sacramento River during the summer months than actually occur. Because the canal was not completed the error was not discovered until over ten years later by the succeeding irrigation company. This necessitated the use of pumps to lift the waters of the Sacramento River during most portions of the irrigation season. This still holds true today.

The most serious difficulty encountered by the Central Canal and Irrigation Company, surprisingly enough, was disinterest on the part of the landowners. Construction was carried on for several years before the system was ready to deliver water. During this period favorable weather conditions led to a few years of successful crops without the use of irrigation. The dry years were easily forgotten during periods of high rainfall and there was little desire for water when it did become available for irrigation. This lack of interest on the part of landowners meant that the Central Canal and Irrigation Company was forced to look for other means to "assure the success of their investment."⁴³

month irrigation system. "These agents found it impossible to sell water rights to land at the then offered price of \$1 an acre for a rated supply of one second-foot for each 160 acres of land, flowing continuously through the irrigation season."⁴⁴ Wooster then organized the Sacramento Valley Land Company, "for the purpose of purchasing the lands, bringing them under canal irrigation, subdividing them into small home tracts, and colonizing them with farmers interested in intensive agriculture."⁴⁵ Through the influence of Wooster and Frank E. Robinson of Los Angeles, the Sacramento Valley Land Company acquired ownership of the Central Canal and Irrigation Company.

THE TRIUMPH OF IRRIGATION

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We are opening up the Western side of the Great Sacramento Valley under irrigation for the first time. Complete irrigation system in operation. Water supply, the navigable Sacramento River, by right of our concession from Congress, for enough water to irrigate two hundred thousand acres.

LOCATION—In Glenn and Colusa counties, lying along the western bank of the navigable Sacramento River.

SOIL—Rich, black sediment—level, without stones or alkali.

CLIMATE—Unsurpassed in California.

IRRIGATION—Free water rights from our complete irrigation system now in operation; most abundant and dependable in United States.

CROPS—Every known commercial fruit and vegetable of the temperate zone yields enormous returns.

MARKETS—Local and world markets ready and accessible.

TRANSPORTATION—Rail and steamboat to the State Capital, at Sacramento; and San Francisco.

PRICES—10-, 20-, and 40-acre lots from \$30.00 to \$100.00 per acre; terms one-sixth cash and the balance in five years.

Wooster and Robinson advertisement extolling "The Triumph of Irrigation" (Reprinted from *Sunset Magazine*, November 1902, Courtesy of Lane Publishing Company)

This presented an opportunity to Clarence M. Wooster of San Francisco, who had been closely identified with the colonization of land in California and other western states. Wooster found the financing necessary to continue and expand the company's operations and attempted to have agents sell water rights to the local landowners for the five

It was at this point in time that the irrigation system became the governing feature of a land-colonization scheme, which was not what Will Green or Byron De la Beckwith had intended when they had so determinedly worked on the project. Nevertheless, it was under this concept that the first water was ever to run through the canal. The Sacramento

Valley Land Company purchased the ranches of John Boggs and George F. Packer, plus a portion of the Glenn ranch, and immediately began colonizing them. These lands received the first water to be distributed through the main canal in 1906.

The operation of the canal and land company was extended despite continued adverse conditions throughout the years 1906, 1907 and 1908. The company became more and more financially involved with the passing time and Wooster was not able to interest sufficient backing to continue indefinitely. Land sales became increasingly rare and the rate charged for water was so low as to make it unprofitable. Wooster and associates began looking for a way out of the situation when it became evident that the company was going to have to obtain a great deal more financial backing or sell the entire system.

They were aided in this endeavor by the national attention that was being drawn to the use of irrigation projects throughout the western United States. Publications like the Stony Creek Survey by the United States Geological Survey, along with the frequently published successful results of projects in other western states, combined to draw the attention of both the government and potential investors. According to Frank S. Reager:

When the survey of Stony Creek was completed and published in 1901, more than half the space was devoted to the Central Canal and the land that could be served by it. This publication attracted attention to this great unfinished work and led to the long and patient work of the successive parties who unraveled and overcame the difficulties. . . .⁴⁶

Will Green had commenced his efforts to establish a system of irrigation in Glenn and Colusa counties in the 1860's and the work had been continued through hardship and adversity for over five decades, first by local individuals and later by other interests located in the state of California. Eastern capitalists were the next group to recognize the potential possibilities for development in the Sacramento Valley. They acquired the irrigation system and continued "transforming the environment of an area which had altered between desert and flood plain to one of agricultural abundance and growth."⁴⁷



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The Sacramento Valley Irrigation Company



The Kuhn banking syndicate of Pittsburgh, Pennsylvania, was the next group to invest their time, money and efforts in the irrigation project which had yet to be fully utilized. In 1908, when Wooster managed to secure the attention of the Kuhn brothers and interest them in the possibilities to be derived from the intensive cultivation of crops under irrigation on the west side of the Sacramento Valley, the Central Canal and Irrigation Company was selling water as a public utility for just a few thousand acres of land. The River Branch Canal and approximately twenty-one miles of the main canal (only forty-five of the sixty-two miles had been excavated at this point) were used to distribute the water.¹ The task of completing the irrigation system that Will S. Green, and so many others had labored on, was now to be undertaken by Eastern business interests.

The Kuhn banking firm, owned and controlled by the brothers, J.S. and W.S. Kuhn, had extensive interests throughout the United States. J.S. Kuhn was president of the First National Bank of Pittsburgh, the Pittsburgh Bank for Savings and the First National Bank of McKeesport, Pennsylvania, and was also a director of several other large banking institutions. W.S. Kuhn was president of their various large industrial enterprises in both the East and the West.² For over twenty-five years the Kuhns had been involved in supplying water, light, power and transportation to communities around the country.

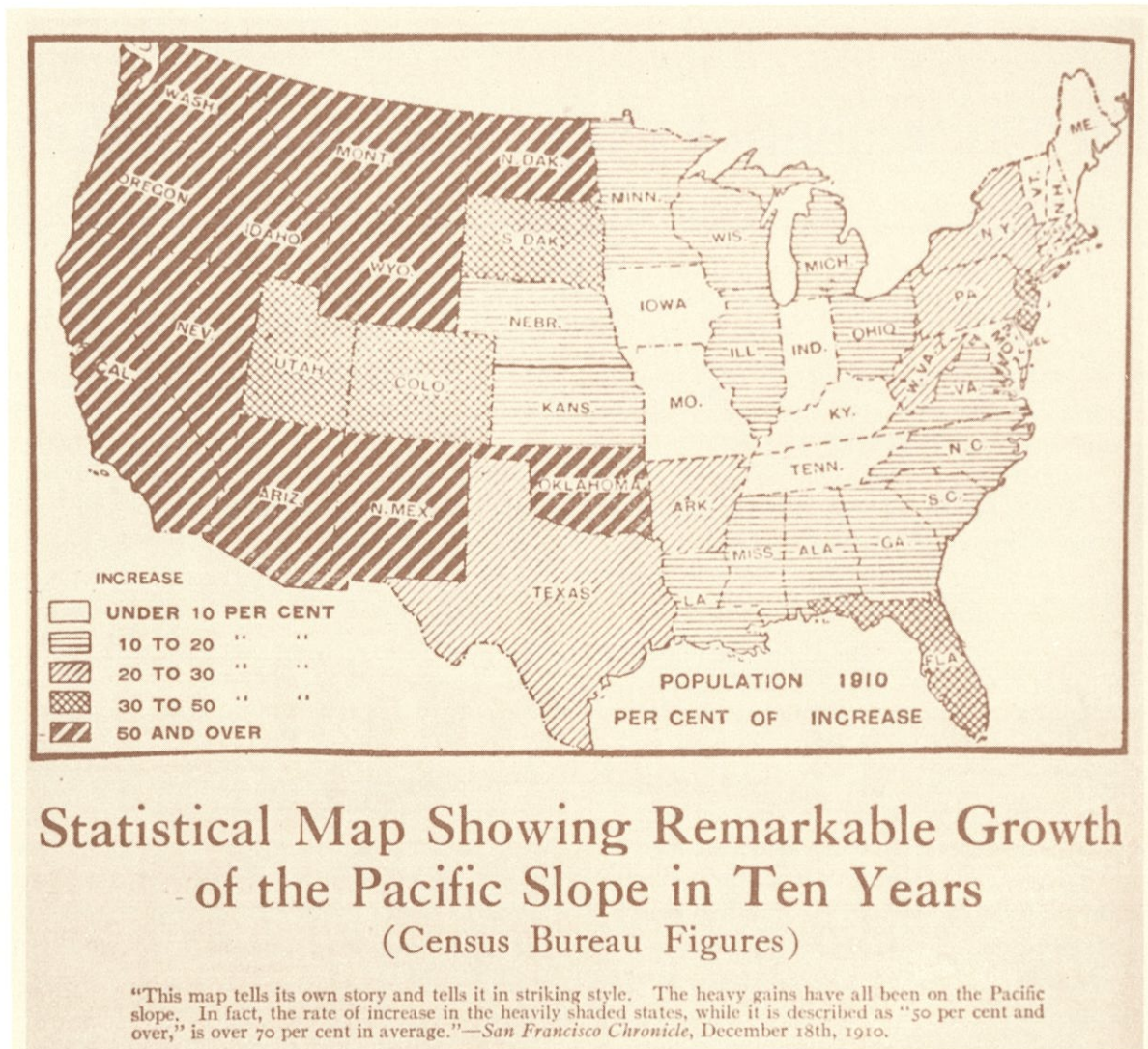
One of their largest holdings, the American Water-works and Guarantee Company, was used to accomplish this. The company

served as a constructing and holding company which covered "water-works, gas, electric light, heat, and power, sewage and drainage plants, irrigation works, canals, steam railroads and street railroads, wherever located."³ "Its policy was to buy only control, not all the stock of its subsidiaries."⁴ The company's holdings included over forty water-works plants, supplying water "to 1,250,000 persons in eighty cities and towns;"⁵ the West Penn Railways System, connecting fifty towns and cities throughout Pennsylvania;⁶ and power companies supplying "light or traction power or both to 125 cities and towns,"⁷ located in the eastern and central United States. The United Coal Companies in Pennsylvania and West Virginia (including thousands of acres of coal lands, the villages in which the miners lived, and the operating properties) were also owned by the firm, making them the "third largest shipper of coal from Pennsylvania,"⁸ at that time.

The immense success of their eastern enterprises led the Kuhns to venture into the area of western development. Their first efforts resulted in the successful reclamation of extensive tracts of desert in southern Idaho, with the use of irrigation. The Twin Falls, Idaho, project involved the construction of several power and irrigation systems to furnish three separate tracts, consisting of over 400,000 acres, with water. The organization first built an irrigation system for the 220,000 acre Twin Falls North Side tract, then commenced the construction of the 125,000 acre Twin Falls Salmon River system. The third work in the region involved the construction of a storage

reservoir to impound the water of five streams for use in the Twin Falls Oakley Tract of nearly 50,000 acres.⁹

“operated as schools for the inexperienced purchasers of farms.”¹¹ The ambitious undertaking led to the ensuing prosperity of thousands of acres of former desert lands and



Map demonstrating the growth and development of the West (Reprinted from *Sunset Magazine*, February 1911, Courtesy of Lane Publishing Company)

The Kuhn organization did not stop with the construction of these irrigation works, but turned their attention to colonizing the lands to be brought under irrigation. An extensive and systematic advertising campaign, headed by H.L. Hollister of Chicago, was so successful that much of the land was sold before construction work was completed. Some of the lands of the Twin Falls Salmon River system in Idaho sold at the rate of 1,000 acres an hour when first offered to the public in forty acre parcels.¹⁰ To accommodate the new settlers, several large hydro-electric plants were built, and demonstration farms were

gave the Kuhn syndicate reason to consider the same type of project elsewhere in the west.

Upon learning of the Central Canal and Irrigation Company's circumstances and the possibility of acquiring the partially completed irrigation system, the Kuhn interests began an intensive investigation into the feasibility of the project. Throughout 1908, and well into 1909, every aspect of the irrigation system and surrounding area was thoroughly explored. Detailed reports were submitted to the Kuhns, and officials of their various companies, to be carefully studied before any final decision regarding the project was made.

Experts from every field were sent to research conditions in the Sacramento Valley and the feasibility of the project. Agricultural experts analyzed the soil, climate and topography of the entire area, submitting statistics on the amount of crops produced in Glenn and Colusa counties, number of dairies, poultry farms, etc. Studies and reports were made on the surrounding lands, market and transportation facilities, local industries and businesses.

The legal situation of both the Central Irrigation District and Central Canal and Irrigation Company was thoroughly researched. W.H. Chamberlin, the attorney who had represented the opposing landowners of the Central Irrigation District, was hired to report on the legal status, if any, of the Central Irrigation District. Financial experts probed and examined the bond situation of the Central Irrigation District, negotiated possible settlements with the stockholders of the Central Canal and Irrigation District, and prepared projected cost estimates.

Engineers investigated the plans and construction of the previous owners in an effort to determine the actual worth and efficiency of the existing canal system. The conclusion of a report sent to J.S. and W.S. Kuhn on November 10, 1909, by A.J. Wiley, a consulting engineer on the project, summed up the advantages of the situation.

It will be seen from the foregoing considerations that the project has the advantage . . . being located in a state where the irrigation laws are old, well established, and fair; that the climate and soil are especially favorable for intensive farming by irrigation methods; that the water supply is from a stream far in excess of the demands of irrigation, and that there is an adequate market for all the products of the soil.¹²

The Pittsburgh syndicate did not ignore the fact that others had already failed in the enormous undertaking, but their reports indicated that any obstacles could be overcome with enough capital, which the firm did have at its disposal. The Kuhns felt that conditions were favorable and that if enough land could be acquired to make the project a large one, it would be to the advantage of all concerned if they were to purchase the irrigation system

and to assume a role in the development of the Sacramento Valley. It was decided that it would be "worthwhile to make an investment of 10 million dollars in Glenn and Colusa Counties with a view to placing 200,000 to 250,000 acres of fertile land under a comprehensive irrigation system."¹³

The Kuhn's success in Idaho gave them the reputation and confidence in an undertaking of this scale. The entire project was to be under their control "from the marketing of the bonds to the construction of the irrigation system and the delivery of title to the settler."¹⁴ A large community of small farmers practicing intensive irrigation was envisioned, and all their previous experience was utilized in order to implement their plans.

The first step towards accomplishing this was the formation of a company to handle the necessary business transactions. On June 15, 1909, the Kuhn interests filed a certificate of incorporation, in the state of Delaware, for the Sacramento Valley Irrigation Company. The following day a meeting of the incorporators was held, at which time W.S. Kuhn presented a proposed contract "for the acquirement by this company of certain property, contracts and rights, as follows:

- a) all the stock of the Sacramento Valley Land Company
- b) all the bonds of the Central Irrigation District
- c) options on approximately 100,000 acres of land in the Sacramento Valley."¹⁵

The contract was approved and officials of the company immediately began the work necessary to procure these holdings.

The Sacramento Valley Irrigation Company had little difficulty in acquiring the stock of the Sacramento Valley Land Company, thereby becoming the owners of the Central Canal and Irrigation Company, with all its assets and liabilities. Wooster and the other stockholders did not hesitate to sell as the company had insufficient capital to contemplate any further construction on the canal system and the possibility of a decision in favor of Beckwith was a very real one. The assets of the Central Canal and Irrigation Company included the fifty year lease with

the Central Irrigation District, the main canal and the River Branch canal, the pumping station, the water appropriations for 5,000 cubic feet per second from the Sacramento River and Stony Creek, and most especially the Congressional Right to divert water from the Sacramento River, along with all the lands acquired by the Sacramento Valley Land Company. The liabilities were primarily considered to be the continuation of legal action taken against the Central Canal and Irrigation Company. The Sacramento Valley Irrigation Company agreed to assume the responsibility for any future settlements resulting from the litigation against the previous company.¹⁶

The firm's legal advisers had determined that if the Sacramento Valley Irrigation Company intended to issue and sell bonds to the public, it would be absolutely necessary to secure title to the old Central Irrigation District in some manner. This was complicated by the fact that members of the board of directors of the Central Irrigation District had all died by this time, making it impossible to obtain "fee title by transfer."¹⁷ The only legal way to acquire title appeared to be by purchasing all the outstanding bonds of the Central Irrigation District (which had clouded title to lands) lying within the district for so many years. The Sacramento Valley Irrigation Company proceeded to gather "up most of the widely scattered bonds at a cost to it of 35 cents on the dollar, including accrued interest."¹⁸ They used the Central Irrigation District bonds as collateral for their own bond issue, for both the irrigation system, and the lands they acquired.¹⁹

Numerous realtors were employed to negotiate and purchase lands on behalf of the Sacramento Valley Irrigation Company throughout 1909 and 1910. A large scale, systematic campaign was carried out to acquire the choicest lands in Glenn and Colusa counties, both within and without the boundaries of the Central Irrigation District. The office in Colusa was the headquarters of this operation, containing maps and records which showed every parcel of land that was to be included in the project.²⁰ These negotiations continued for months with each big sale drawing attention in the local papers. Headlines such as "A Big Land Deal in Colusa County

Yesterday," "Pittsburgh People Buy Another Ranch," and "Syndicate Buys Colusa County Lands," were frequently seen during this period.²¹

The terms offered by the Kuhns were generally considered to be generous, as most lands were purchased at approximately *twice* the land assessment levied for the year 1907 by Glenn and Colusa county assessors.²² The landowners of the Central Irrigation District had received the proposition from the Sacramento Valley Irrigation Company "that in return for a year's option for their holdings at an agreed price, the Kuhn interests would acquire all available outstanding bonds and clear title to the lands whether they took advantage of it or not."²³ W.H. Chamberlin, the former attorney of the opposing landowners of the Central Irrigation District, was retained by the company to assist in these negotiations with the landowners. The number of landowners who took advantage of the opportunity to sell is evident in this item, which appeared in the November 26, 1909, *Willows Review*:

The old inhabitants of this county are rapidly selling their lands to the Pittsburgh syndicate, and many are preparing to move away for the majority have enough money to last them the remainder of their natural lives, and they can live in luxury in the bargain. A number of the grain farmers are selling only part of their land and reserve just enough to till and keep them out of mischief.²⁴

It was in this manner that the Sacramento Valley Irrigation Company eventually acquired sufficient acreage to launch their project. Over 135,000 acres of land, "stretching from Hamilton City and Willows on the north to the vicinity of Arbuckle on the south and from the Sacramento river on the east to a line several miles beyond the Southern Pacific line on the west,"²⁵ had been purchased, and would now be subdivided and placed upon the market for sale, "with the representation that water rights under the canal system were attached thereto."²⁶

The Sacramento Valley Irrigation Company intended to add the price of the preferential water rights to the price of the land and sell them as a package. A subsidiary corporation, the Sacramento Valley West Side

Canal Company, was formed under the laws of California, on August 6, 1909, for the purpose of conducting their water business in Glenn and Colusa counties. The Sacramento Valley West Side Canal Company was created:

to own, acquire, hold, manage, control, operate and maintain that certain canal and irrigation system now owned or being acquired and constructed by the Sacramento Valley Irrigation Company.²⁷

The completion of the main canal system and necessary laterals was to be financed by the Sacramento Valley Irrigation Company, in exchange for which they would maintain ownership of 249,500 shares of the Sacramento Valley West Side Canal Company's 250,000 shares of capital stock. One share of stock was to be issued with each acre of land that was sold and would entitle the owner to the perpetual water right and a proportionate share in the canal system.²⁸ This meant that the Sacramento Valley West Side Canal Company was a mutual water company because, when the Sacramento Valley Irrigation Company had sold all of its lands, the ownership of the canal company would pass to the landowners, who would then have the authority to elect their own officers and receive water at cost.²⁹ Until this occurred, however, an annual charge for maintenance and operation was to be paid to the Sacramento Valley Irrigation Company. This was the same plan of organization that the Kuhns had used so successfully on the Idaho irrigation system.

A deed dated June 16, 1910, conveyed the Sacramento Valley Irrigation Company's canal system and water rights to the Sacramento Valley West Side Canal Company. The water rights included a filing that had been made for the additional diversion of 5,000 cubic feet per second from the Sacramento River, by the Sacramento Valley Irrigation Company on November 5, 1909, at the site of the previous filings, along with the water rights agreements received from the Central Canal and Irrigation Company. The Sacramento Valley West Side Canal Company, although still under the control of the Sacramento Valley Irrigation Company, now possessed the means to provide water and irrigation to thousands of acres in Glenn and

Colusa counties.

The community welcomed the Sacramento Valley Irrigation Company as the majority now realized that their only hope for future prosperity was in the irrigation of the lands.³⁰ The impact this company could have on the area was brought to the public's attention in the August 13, 1909, edition of the *Willows Semi-Weekly Journal*, which predicted:

that within five years Glenn and Colusa counties will have a population three times as great as at present, that is, if the people encourage the syndicate which has begun the development of this section on a big scale.³¹

Even more attention was focused on the project in early October of 1909, when President William H. Taft passed through Willows. He spoke for a few moments on irrigation and was reported to have said that:

... he had heard that Willows was interested in irrigation and was turning its attention to getting water on the broad plains surrounding the city. He was glad to hear this as history through the West had taught him the value of irrigation . . .³²



*Celebration in Willows at the Hockheimer Department Store
(Courtesy of Charles A. Henry)*

The advances being made in irrigation and agricultural methods throughout the west

drew such widespread attention that many people became interested in the opportunities presented by these developments. Investors saw the potential profits to be derived from these irrigation and farming developments. Others were interested in the fact that large amounts of acreage were no longer required

to succeed at farming and many began pursuing the idea of settling in the west themselves. Certain publications of the day, such as *Sunset Magazine*, advertised land colonization projects all over the western United States, and the competition between developers was intense.

The Water Supply

The most Important Factor for the Intensive Farmer



NEAR JACINTO LANDING—The source of our water supply, the ever-flowing Sacramento River

The Mean Annual Flow of this Great River 30 miles above our intake for a period of ten years, has been 9,963,160 acre feet. The Mean Monthly Minimum 4,760 Second Feet.

Our Water Right is authorized by a Special Act of Congress. Our Soil, Climate, Markets and Transportation Facilities are the best.

Our Crops, Alfalfa or Oranges, Vegetables or Almonds and ALL other California Products.

Our Terms Guarantee The Value

\$125 per acre—\$15 per acre cash, the balance in Ten Annual Installments

We invite the closest investigation, if you can't come now, for further information, cut around the dotted line and mail coupon to

SACRAMENTO VALLEY IRRIGATION CO.,
H. L. Hollister & Company, Sales Agents, Willows, California.

Name.....

Address..... State.....

Or call at any of the following offices—506 Central Bldg., Los Angeles, Cal., 345 Fourth Ave., Pittsburg, Pa., 205 La Salle Street, Chicago, Illinois, 412 Market Street, San Francisco, Cal.

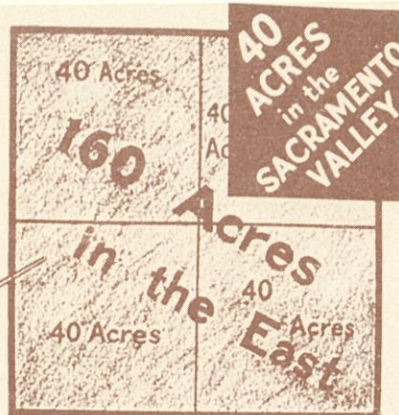
*Sacramento Valley Irrigation Company advertisement highlighting "The Water Supply" in the March 1911, issue of **Sunset Magazine** (Reprinted from **Sunset Magazine**, Courtesy of Lane Publishing Company)*

I CAN

Raise more FEED on 40 acres in the Sacramento Valley near Willows than I could raise on 160 acres on my Eastern farm.

—Statement of a Wisconsin breeder of registered Holsteins who owns one of our Small Farms.

His name given on application.



In other words—

One of our 40-acre small farms will produce 4 TIMES as much feed as 40 acres in the Eastern dairy States.



This would be the size of your haystack in the EAST and in the SACRAMENTO VALLEY

When you raise four times as much feed on a given number of acres it also means that you can feed four times as many cows.

On one of our Sacramento Valley irrigated farms you don't have the snow and blizzards of winter to contend with—you don't have to store away fodder for winter feeding—you don't have to sit

back and wait for spring. Your cows, pigs or chickens can run out in the open.

We have an abundant supply of water at all times during the irrigating season.

Just see what a small amount it takes to be a "California Farmer" on one of our small farms.

\$15 DOWN THAT'S ALL **\$11 A YEAR THAT'S EASY**

Climate, soil and water are your helpers. You can purchase your cows on the installment plan, paying for them with half the amount of your cream checks. All that is needed is your guidance and your willingness to work. If you sow, you will reap. Every day in the year the alfalfa is growing in the field. Five to seven crops a year is general—many cut seven and eight and harvest from one to two tons an acre each cutting.

The most profitable returns to be realized, however, is to feed it to your stock. One acre of alfalfa will support one cow, two hogs and a calf. Each cow should produce on an average \$75 to \$100 worth of butter fat in a year. The calf should be worth from \$7 to \$10 at the end of the year and the two hogs should weigh from 200 to 250 pounds, giving an income for the year of from \$90 to \$130 per acre.

One of the attractive features of dairying on this plan is that the revenue is coming in every month of the year. This estimate can be very materially increased by raising a flock of poultry.

Alfalfa hay in the stack sells readily at from \$5 to \$7 the ton and if held and baled, it should yield from \$10 to \$18 the ton.

The man who investigates the actual facts regarding this country—who interviews those who are here now realizes that

"Twenty's Plenty—Forty's a Fortune"

Twenty acres is plenty, it will give you a freedom and independence experienced only on a Sacramento Valley small farm.

If you are now farming in a country where the snow falls or if you are tied to some desk or city job, you are on the wrong road to find absolute happiness.

Personal freedom with its pleasures, profits and plenty is found only in the great open air country of California. If you want to be healthy, happy and hearty with more than an even break to become wealthy write for detailed information regarding these small farms.

You can purchase from 20 to 80 acres in this fertile district for \$125 an acre, \$15 down and the balance spread over ten years. Expert dairymen and agriculturists will advise you free of any cost and every co-operation will be extended. If you'll work you win. Do you want to be king of a little kingdom, all yours?

Then write to us today for maps and printed matter.

H. L. HOLLISTER & CO.

Willows, California
412 Market Street, SAN FRANCISCO
1027 9th Street, SACRAMENTO

137 So. La Salle Street
CHICAGO, ILL.

345 Fourth Avenue
PITTSBURG, PA.

July 1911 advertisement dealing with the productivity of small acreages
(Reprinted from Sunset Magazine, Courtesy of Lane Publishing Company)

Through the efforts of the Kuhn organization, the entire state of California received nationwide publicity during this period, and Glenn and Colusa counties became known as some of the most progressive areas in irrigation and colonization affairs.³³ The syndicate provided exhibits of Sacramento Valley products (with the assistance of the Sacramento Valley Development Association) to be displayed in Chicago, at the United States Land and Irrigation Exposition, the International Live Stock Show, and the Farm Lands Congress, in December of 1909. The Kuhns spent \$1500 on the exhibits before a final decision on whether or not to invest in the Sacramento valley project had even been reached.³⁴

The interest displayed in the Sacramento Valley exhibits in Chicago was a contributing factor to the Kuhn decision to invest in the Sacramento Valley project. The advantages of an extensive advertising campaign had been successfully demonstrated with the Twin Falls project, under the direction of H.L.

Hollister. So, it was with little hesitation that the Kuhns allocated a large fund for the advertising of the Sacramento Valley Irrigation Company, and once again appointed Hollister to direct it. Large offices were maintained in Chicago, as the Eastern headquarters for colonization at the Home Insurance Building, and an office in Willows served as the local headquarters for the campaign.³⁵

The sales campaign was quite sophisticated, catering to those who were interested in the lands strictly as an investment, as well as to those seeking homes. Entire farming companies were established to plant and manage the lands purchased by investors whose only obligation was to provide the financial backing for this type of operation (and collect the returns). Individuals who hoped to retire in California were often persuaded to invest in this type of company as it would be to their advantage to have their land worked and managed by others until they could retire.³⁶



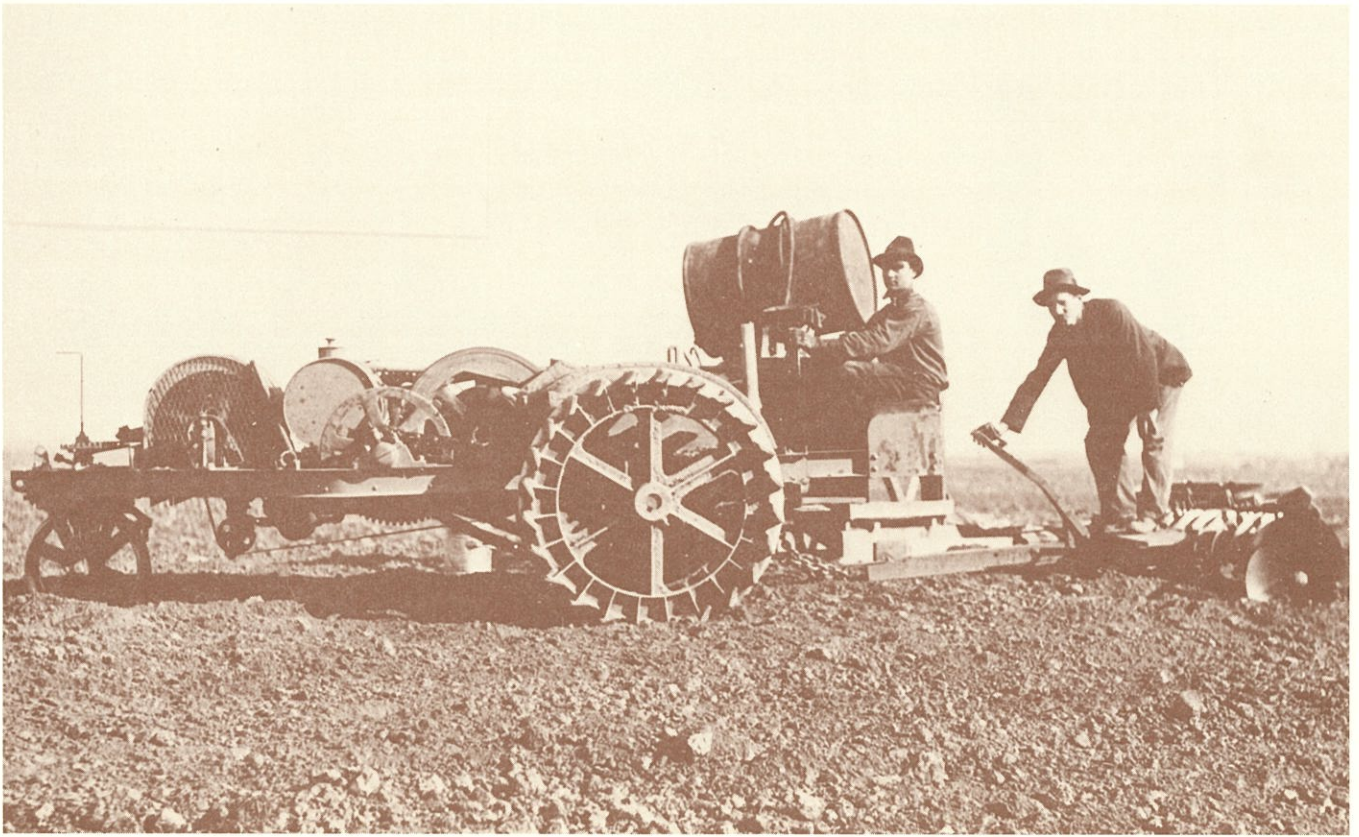
Spring plowing with horses and mules



Mule-drawn land plane preparing for irrigation



Innovative mule-powered conveyor/excavator



Early internal combustion tractor pulling a disk



Steam powered tractor pulling three plows

The campaign was particularly geared towards the homeseeker with limited means, however. The Sacramento Valley Irrigation Company's land was to be sold in twenty and forty acre parcels, with eighty acres being the largest possible block sold to any one buyer. They preferred the farms to consist of forty acres or less, with each acre being developed to its maximum potential.³⁷

DELEVAN UNIT

**Make Big Profits in the
SACRAMENTO VALLEY**

**THE KUHN
CALIFORNIA
PROJECT**

**IRRIGATED
FARMS**

**Large
Acreage
Unnecessary**

TWENTY'S A PLENTY—FORTY'S A FORTUNE

For Prices, Terms and other information call on or address
the nearest Office of the

KUHN IRRIGATED LAND CO.

Pittsburgh, Pa., - - - 511 Wood Street
San Francisco, Cal., - - - 412 Market Street

Cover of one of the Sacramento Valley Irrigation Company's promotional brochures

This outlook was reflected in their promotional efforts which consisted of brochures, posters, lectures, and magazine articles, and were circulated throughout the United States and Canada, attracting hundreds to the Sacramento Valley. The slogan "Twenty's a Plenty—Forty's a Fortune" appeared on one of their brochures, along with a map of the entire project. The cover proclaimed that the Kuhn California Project was where:

Intensive Cultivation Brings Enormous Profits

Markets are Near With Water and Rail Transportation

Energetic Men and Women May Obtain Health, Wealth and Contentment

The Panama Canal and Irrigation Will Enhance Land Values Immensely

The inside of the brochure explained that the settler should decide how many acres to purchase according to what he intended to do with the land.

If he is to go into general farming and has a good working capital, he may find 80 acres none too much for his purposes. If small fruits and garden products are to be grown, or if almonds, peaches, oranges, prunes or other fruits are to be his crops, a 20 acre place well managed will yield him a liberal income. A considerable business in poultry, dairying and hog raising may be done with 20 acres.

Settlers were encouraged to organize a colony of friends to take advantage of "the best terms and conditions generally to be found in the state," which they summed up in the conclusion of this pamphlet.

We offer you land with the water ready for immediate use, a complete system of drainage, good roads every half mile, some of the richest land that lies out of doors, and easy terms of payment.³⁸

Various other brochures of this sort were printed, some using the slogan "California—Now or Never" and, for the more serious shopper, detailed maps of the individual tracts being developed such as the Maxwell, Delevan, Packer-Boggs and Jacinto Units, were available.³⁹

Thousands of posters were issued and placed across the country, depicting a "tawny-haired young woman in a commanding pose

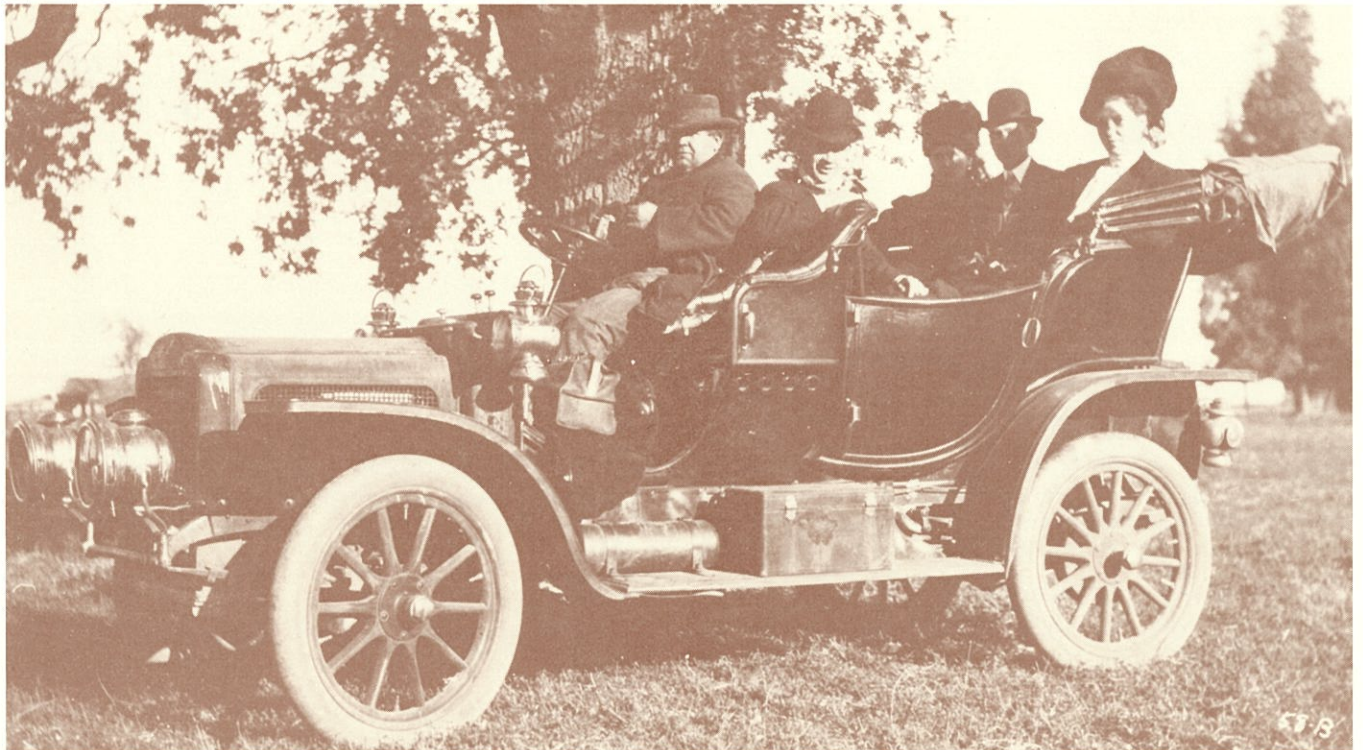
calling the people to a happier and better existence in California."⁴⁰ Leading magazines and newspapers were used to advertise a forty-eight page color booklet illustrating the Sacramento Valley project that was distributed in the midwestern and eastern states. Lecturers traveled around presenting talks on the Sacramento Valley project. *Sunset Magazine* published an article in January 1910, titled "The Pittsburgh Syndicate's Latest—Straight Facts About the Slicing Up of the Sacramento Valley's Big Grain Farms," containing information on the Kuhn's previous endeavors as well as on their plans for the Sacramento Valley lands.

The article also attested to the syndicate's solid reputation saying, "What is of special interest to Californians, and to all who expect to become citizens of California, is the soundness of the organization behind this particular feature of the state's development."⁴¹

This extensive advertising campaign succeeded in drawing large numbers of potential buyers to the Sacramento Valley. Within the first month of sales over 10,000 acres were sold or "reserved for examination," and it was predicted that if sales continued at that rate all of the Sacramento Valley Irrigation

Company's land would be sold by the spring of 1911.⁴² The price of the land averaged between \$125 and \$150 an acre. A ten year installment plan was available for the small settler, with a ten per cent down payment on each acre purchased, and a six per cent annual interest charge for the unpaid portion of the balance. Many newcomers took advantage of this plan, as it gave them the opportunity to acquire sufficient acreage for diversified farming with a low down payment, and the means to pay off the balance by taking immediate possession and working the land.

This was a new breed of pioneer coming to the Sacramento Valley from other parts of the country. *Sunset Magazine* referred to them as "necktie farmers" because they were coming from other occupations to learn and pursue the more modern and scientific methods of farming that were being developed during this period.⁴³ Their success did not depend upon years of experience and large amounts of acreage as it had for previous generations of farmers, but rather upon how much effort they applied to improving their land. Agricultural experts were employed to instruct and assist these new settlers, who arrived by railroad in increasing numbers, throughout 1910 and 1911.



Prospective buyers touring the area

THE SACRAMENTO VALLEY IRRIGATION COMPANY'S FARM CONTEST



Farming contest judges inspecting orchard growth (Courtesy of Erwin Page)

As part of its extensive advertising campaign the Sacramento Valley Irrigation Company sponsored farming contests from 1910-1913. Farmers in the Kuhn project were offered valuable and useful prizes for participating in the contest. These included: livestock, poultry, tools, nursery stock, and cash among other things. The prizes were awarded on the basis of who had the best intensely cultivated farm, best poultry farm, best diversified farm, best alfalfa stand, best dairy farm, etc. Judges for the contest included leading agricultural men of the state, Professor E.J. Wickinson of the University of California and C.B. Messenger, editor of the *California Cultivator*, of Los Angeles, were members of the judges panel for several years. The committee of judges carefully inspected each entry before deciding upon the winners.

The first person to win the contest in 1910, was W.F. Burt, of Princeton. His intensive farming operation was supposedly one of the prime examples originally used to motivate the Kuhn syndicate to invest in the project. Burt purchased a farm of seven and one-half acres in 1904 at a time when the large grain farms were still in existence. He was apparently scoffed at by the grain farmers but continued to plant a wide variety of crops on his small acreage and irrigate them consistently. His method of farming was described in an article titled,

"The Nile of the West," which appeared in the May, 1911, issue of *Sunset Magazine*.

With his \$1,000 savings Burt made his first payment on his little farm, built his house and barn with his own hands and began to farm it as farming should be done. With only seven acres of land left for cultivation, Burt sowed three acres to alfalfa, and around the home he planted a small orchard. Between the trees he planted strawberries, mammoth blackberries, loganberries, raspberries and vegetables of various kinds. Under every tree he placed a beehive, so that the bees might pollenize his trees while storing for him their golden honey. On one corner of his little farm he planted some Egyptian corn and melons and then he kept on planting and sowing things until every foot of land was made to do double and treble service. Still he had land left sufficient to devote to a chickenyard, a pigstye and a cowpen.

In the year 1910 Burt took from his seven acres a total of \$2,063 and with his aggregate savings he purchased forty acres of river-bottom land from what was formerly the Boggs ranch. While doing this, Burt easily won the prize offered by the Sacramento Valley Irrigation Company for the best developed farm. The prize, a registered Holstein cow valued at \$500 and rejoicing in the name of "Woodland Wilhelmina," now grazes contentedly with the little Burt herd on the little Burt alfalfa patch.

The story of Burt's success was used by the Sacramento Valley Irrigation Company in an advertisement appearing in the same issue.

Remember This

There's \$10,000,000 back of this project. "If you are willing to work you win."

Good Cows and Alfalfa
Bring Immediate Returns



SEND FOR BOOKLET

A Last Chance to Get Good Land Cheap

\$15.00 down that's all
\$11.00 a year that's easy

Our Small Sacramento Valley Farms Pay

Last year, Mr. W. F. Burt—a former drayman—made over \$2,600 on 7 acres—besides supporting his family. Burt's farm paid him nearly three times its first cost in one year! Many others are making equally amazing profits on our small, low-priced farms.

The Big Bonanza Ranches of the Sacramento Valley have at last been broken up. Now men of small means have the chance of a century in this vast, fertile valley. Here you pay **only \$15 an acre down**—the rest spread over ten years—\$125 an acre in all, with a water supply assured the entire growing season. 20 to 80 acre tracts. Why pay more elsewhere for the same kind of land? This low price and easy terms gives the man of small means a chance. He can make the land **pay for itself** long before the last payment is due.

Sacramento Valley Irrigation Company

For Information and Free Book write

H. L. HOLLISTER & CO., Willows, California

345 Fourth Ave. Pittsburgh, Pa. 137 So. La Salle St. Chicago, Ill. 506 Central Bldg. Los Angeles, Cal. 412 Market St. San Francisco, Cal.

Sunset advertisement featuring W. F. Burt's success in the annual farming contest (Reprinted from Sunset Magazine, May 1911, Courtesy of Lane Publishing Company)



*Demonstration of the size of mammoth blackberries grown in the Sacramento Valley, used to spell out the SVI CO., with silver dollars for punctuation
(Courtesy of The Museum, Willows)*

The railroads were the primary source of transportation used to bring prospective buyers to California from various parts of the country, particularly the midwest. Freight and passenger rates were quite reasonable at this time: a carload of household goods not exceeding 20,000 pounds could be shipped from most points in the midwest to Willows or Colusa, for approximately \$200.⁴⁴

Hollister used the luxurious Pullman cars to bring groups of eastern financiers to look over the project. He is reputed to have built the town of Delevan, located about ten miles south of Willows and consisting of a few buildings and a very nice hotel, to keep the prospective buyers away from free lance real estate operators in Willows who were capitalizing on the land boom the Kuhns had created.⁴⁵



The Delevan Hotel—March 14, 1913

(Courtesy of Charles A. Henry)

The arrival of these buyers caused a great deal of interest. The *Willows Semi-Weekly Journal* for February 15, 1910, covered the event in an article bearing the title "Eastern Millionaires Visit This Section." Seventeen bankers arrived in their private railroad car to begin a tour of inspection with the local officials of the Sacramento Valley Irrigation Company. Fifteen automobiles were used to convey the group to Hamilton City where they were served lunch by the Sacramento Valley Sugar Company at the Shotover Inn. "The trip then continued through the syndicate's lands to the Bayliss camp, where an elaborate banquet, consisting entirely of California products was served." The visit concluded the following day with an automobile tour over the Sacramento Valley Irrigation Company's holdings in Colusa county. Every member of the party was reported to have been enthused over what they saw in the Sacramento Valley, and one commented that, "Nothing except the sheerest idiocy can long delay the great influx of desirable homeseekers and even that cannot indefinitely postpone it."⁴⁶

The population of Glenn and Colusa counties did substantially increase during this stage of the Sacramento Valley Irrigation Company's involvement with the project, and nowhere was this more apparent than in Willows, where the population more than doubled. The company established its headquarters for

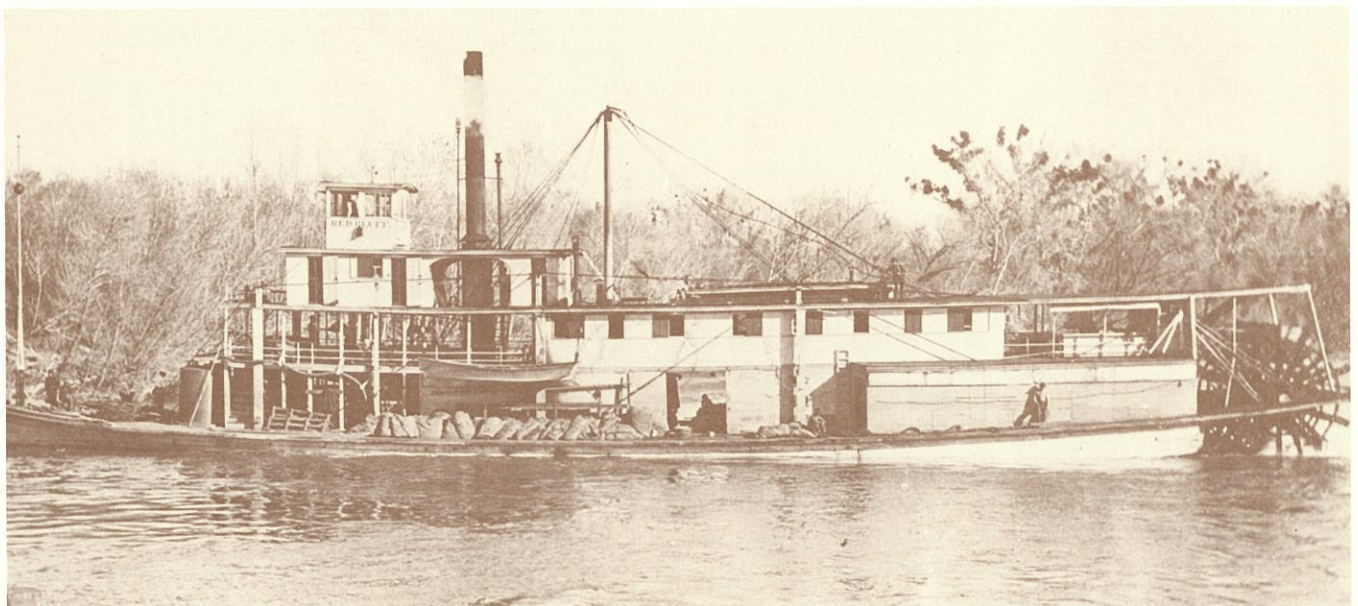


*The Shotover Inn in Hamilton City
(Courtesy of Charles A. Henry)*

the enterprise in Willows, and within a short period of time the appearance of the town changed considerably.



*Crowd awaiting the arrival of a trading steamboat
(Courtesy of Charles A. Henry)*



The stern-wheeler Red Bluff carrying cargo

One hundred acres of land lying on the east side of the railroad tracks (which had previously been used as a race track) was purchased from the Agricultural Association and became known as the Pittsburgh Addition.⁴⁷ The tract was subdivided into lots, trees were planted, streets were graveled, and at least 20 homes were built. The Sacramento Valley Irrigation Company constructed several office buildings on the tract, namely the administration building, the company garage, the company rooming house and several bungalows (a few of these buildings are still standing

today). The *Willows Review* reported upon the progress being made in early March of 1910:

The Pittsburgh annex to Willows is rapidly assuming the proportions of a neat, showy and also substantial town. The new and large administration building is now occupied by about 50 or 60 officers and their stenographers and typewriters. The residences and other buildings are nearing completion and the streets, alleys and avenues are being graded and graveled, and the broad sidewalks are to be made of concrete.⁴⁸



The Sacramento Valley Irrigation Company's sales office in Willows



The interior of the Sacramento Valley Irrigation Company's office

THE SACRAMENTO VALLEY IRRIGATION COMPANY'S MEDICAL PLAN



OUR LODGING HOUSE AT WILLOWS FOR YOUR COMFORT

The Sacramento Valley Irrigation Company's lodging house, also used as a hospital

(Courtesy of Erwin Page)

The Sacramento Valley Irrigation Company's Boarding House also served as the company hospital. Dr. Etta Lund described the way in which she and her husband, Dr. Charles Lund, were employed by the Sacramento Valley Irrigation Company to handle the medical problems of the many employees (which included malaria), in "Saddle Bags to Station Wagon." Her story appeared in the February 1960 issue of *Wagon Wheels*:

Dr. Charles and I became contract doctors for the S.V.I. This was before the time of mandatory accident insurance.

There were several hundred employees for whom we received \$1.00 each per month. In those days that was a large sum of money. For this \$1.00 we were to provide medical care, medicine and room or place for the patient to stay. If severely injured or ill the patient was referred either to Woodland or Sacramento, seldom Chico, for there was no equipment there.

There were two types of employees, laborers and clerical workers. We rented a room in the old Heard residence, which at that time was being operated as a rooming house, for the laborers. The clerical workers were taken into our home. We were now living in a large house with four bedrooms upstairs, which we fitted up for our patients. (page 16)

This was the manner in which the Sacramento Valley Irrigation Company took care of the medical needs of the hundreds of employees that came to the area in the first years of construction. The experience Dr. Etta Lund acquired in operating the Sacramento Valley Irrigation Company's hospital, along with the genuine need for a community hospital, prompted her to open the Willows Sanitarium, in 1918. She continued to be a vital and important part of the community's medical profession for many years.

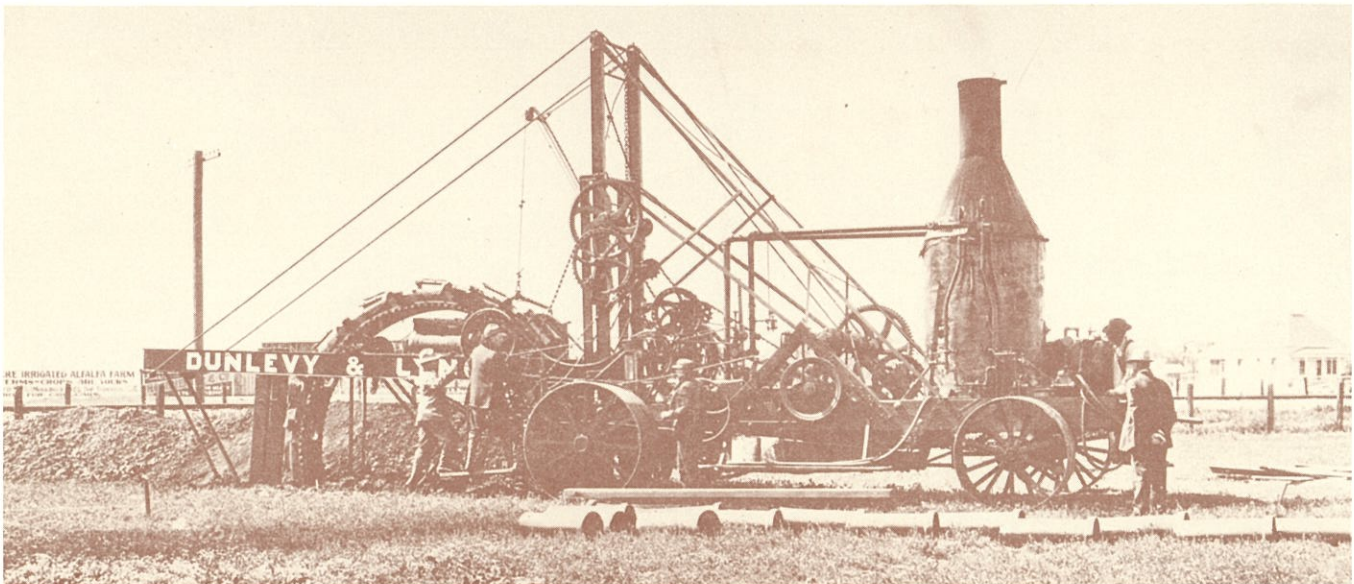
The entire town prospered as a result of the activities of the Sacramento Valley Irrigation Company. Twelve blocks of homes were built in southern Willows; nearly every existing business was remodeled and many new buildings were constructed, among them the Masonic Temple and City Hall.⁴⁹ The Sacramento Valley Irrigation Company also built a park in the Pittsburgh Addition which was planted with trees and flowering shrubs,⁵⁰ and donated adjoining lots on the corner of Sacramento and Walnut Streets where the Presbyterian Church and manse were constructed.⁵¹ Fentress Hill, the company's general manager, donated a lot on which the Holy Trinity Episcopal Church was built to accommodate the increasing congregation that was arriving in the area as a result of the project.⁵²

The Kuhn's engineers and white collar workers altered the social structure of the community which had been primarily rural until this point. These "easterners" were "going to show the people of Willows how to live" according to one woman. Both a dance club and a men's club were organized, tennis courts were built, and golf was even attempted.⁵³

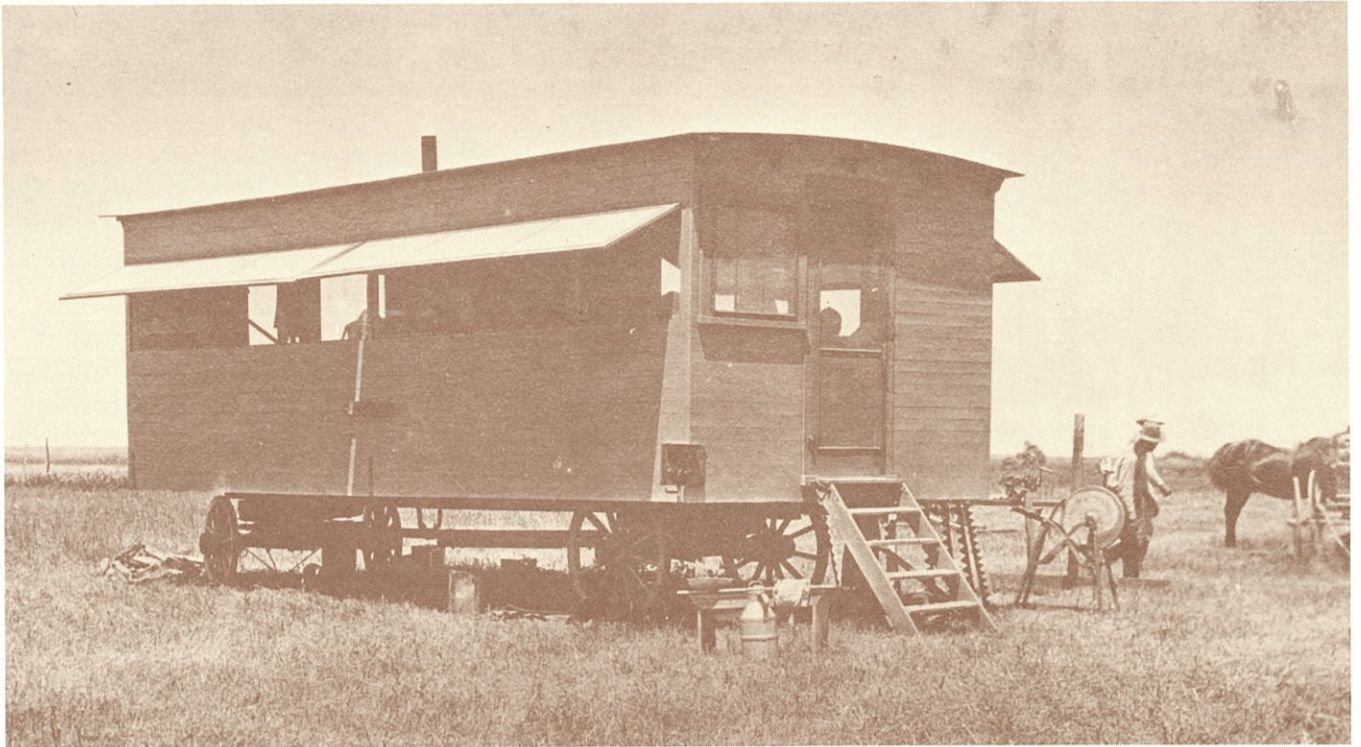
The surrounding lands and irrigation system were not neglected while all this activity was taking place in Willows; considerable progress was made in these areas during the first few years. First, a crew of seventy surveyors and assistants worked at plotting all the lands of the syndicate,⁵⁴ dividing it into forty-acre plots with irregular lots being placed only along the old highways and the canal system.⁵⁵



Surveyors at work on canal



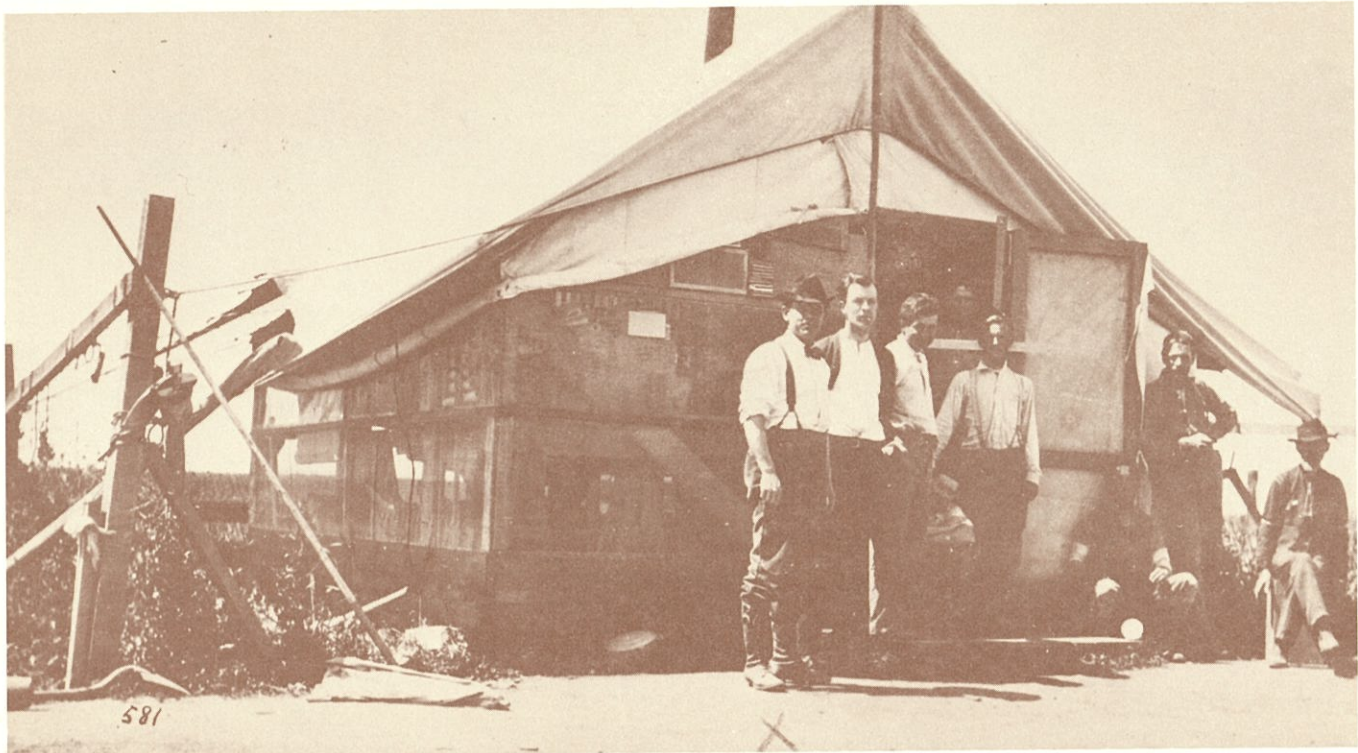
Steam powered trenching machine, excavating for pipeline



The cook's wagon



The cook preparing a meal



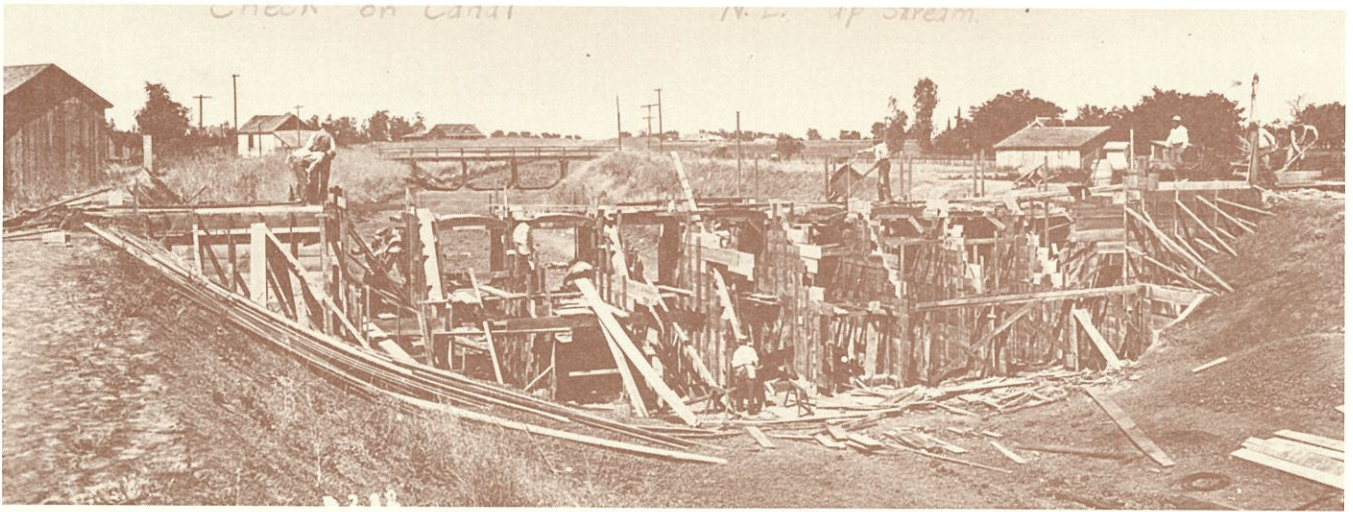
Survey crew in camp

Roads were another important feature of the Kuhn's development program. Each quarter section was to have a road surrounding it and each forty acres was to have a highway on two sides. Gravel pits were maintained so that road repair material would always be

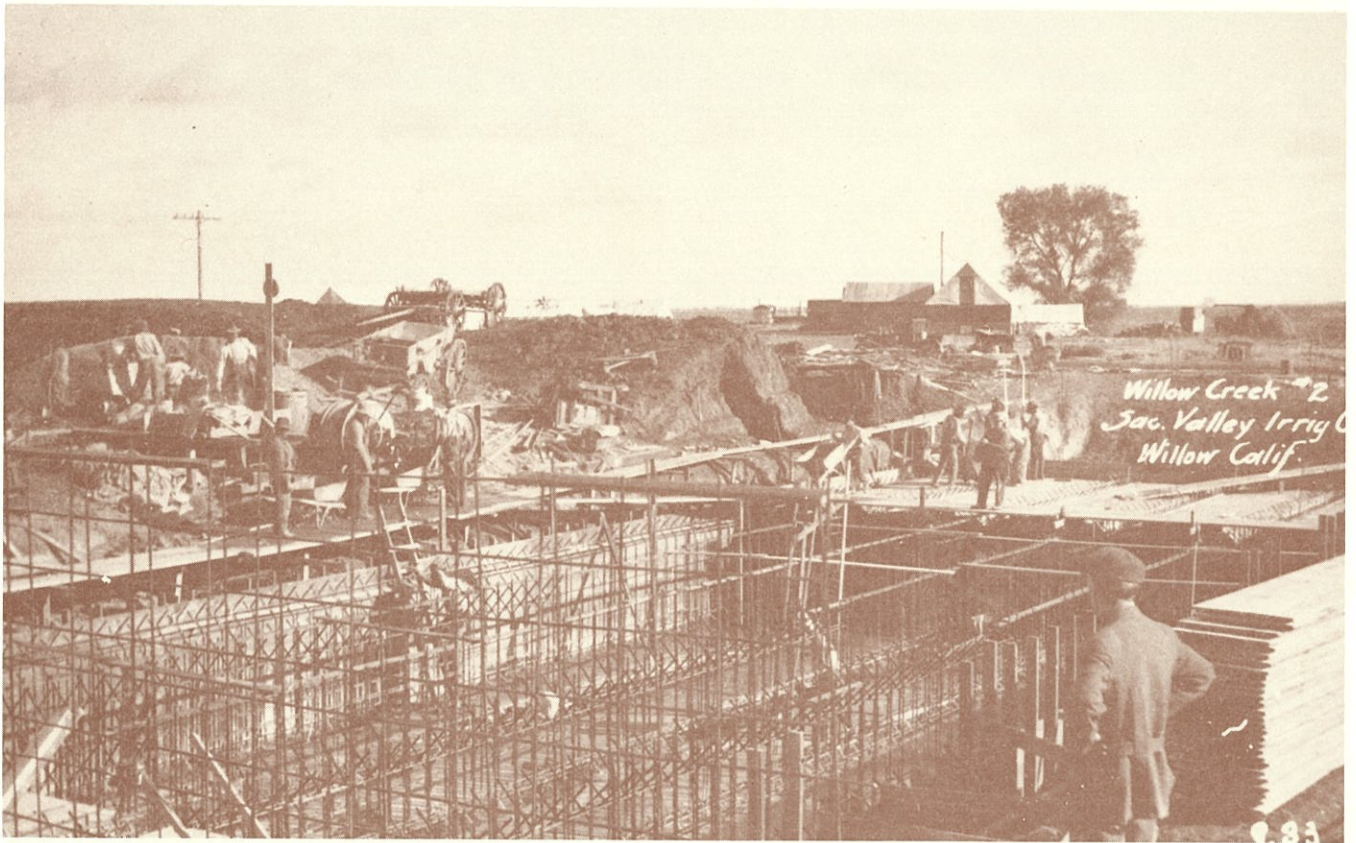
available, free of cost, and concrete construction was used for permanent fixtures,⁵⁶ to help keep the cost of future maintenance down. Land was leveled and prepared for irrigation, with careful records being kept of all improvements.



The main canal being excavated with fresno scrapers



Main canal check at Willows, under construction



*Pouring foundation of Willow Creek Siphon
(Courtesy of Special Collections, Meriam Library, California State University, Chico)*

A great deal of progress was made on the canal system itself. The original plans for the main canal had been modified by the company's chief engineer, D.W. Ross, to increase the capacity at the upper end of the canal from 700 to 1240 second feet.⁵⁷ The main canal neared completion with the construction of all gaps in the canal "from the pumping station at the south bank of the Sacramento River

near the Tehama County Line, through Glenn County to a point several miles south of Maxwell in Colusa County."⁵⁸ A large number of laterals were also built by the Sacramento Valley Irrigation Company to convey water from the main canal to the forty acre tracts; and a system of drainage and irrigation were considered to be important features of the construction work.



Construction of side chamber of Willow Creek Siphon
(Courtesy of Special Collections, Meriam Library, California State University, Chico)

One of their major achievements was the installation of an additional pumping plant and four large pumps, which were operated for the first time on June 22, 1911. The *Tri-Weekly Colusa Sun* covered the event for the Saturday paper with the front page article "Pumps Given a Tryout":

For the first time yesterday afternoon, the four gigantic pumps of the Sacramento Valley Irrigation Company at Hamilton City were simultaneously put in operation. Running all at the same time they lift out of the Sacramento river and pour into the great canal, the enormous volume of 900 cubic feet of water a second. . . The pumps were run only a short time, but they lifted so much water that the canal ran like a river. They were then turned off and are now ready for use when Stony Creek becomes too low.⁵⁹



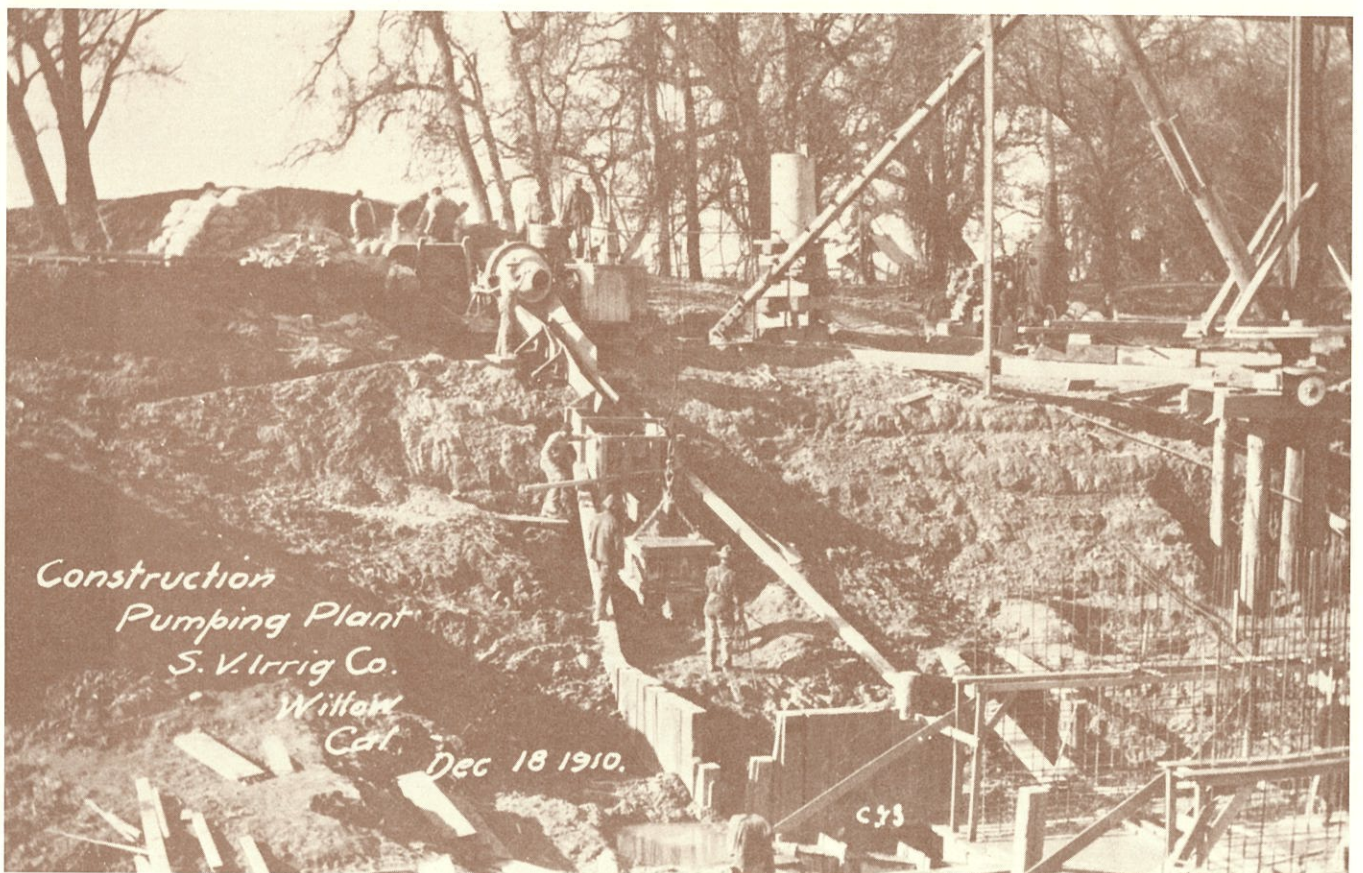
Placing concrete to finish top of Willow Creek Siphon



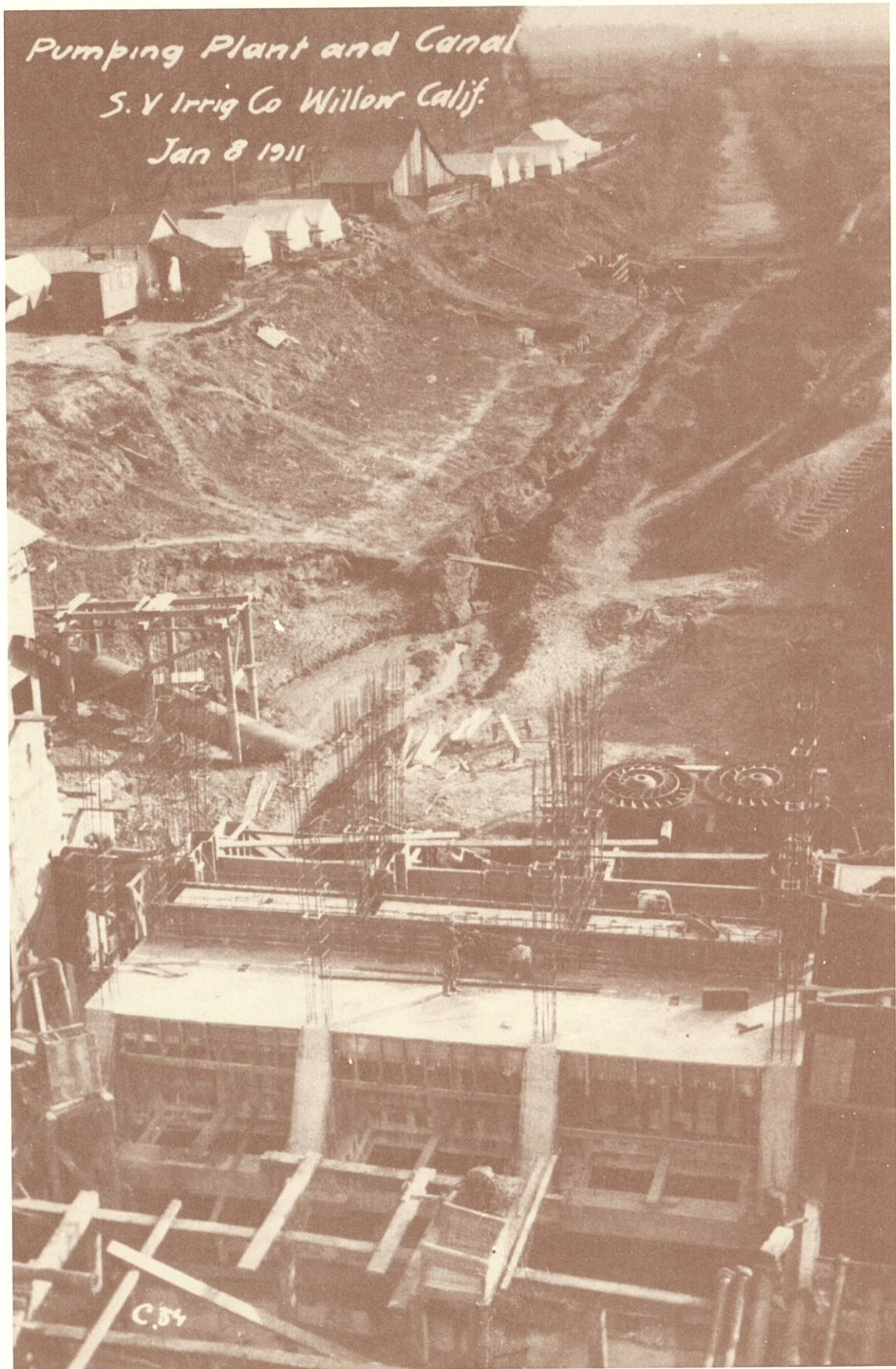
Siphon nearing completion



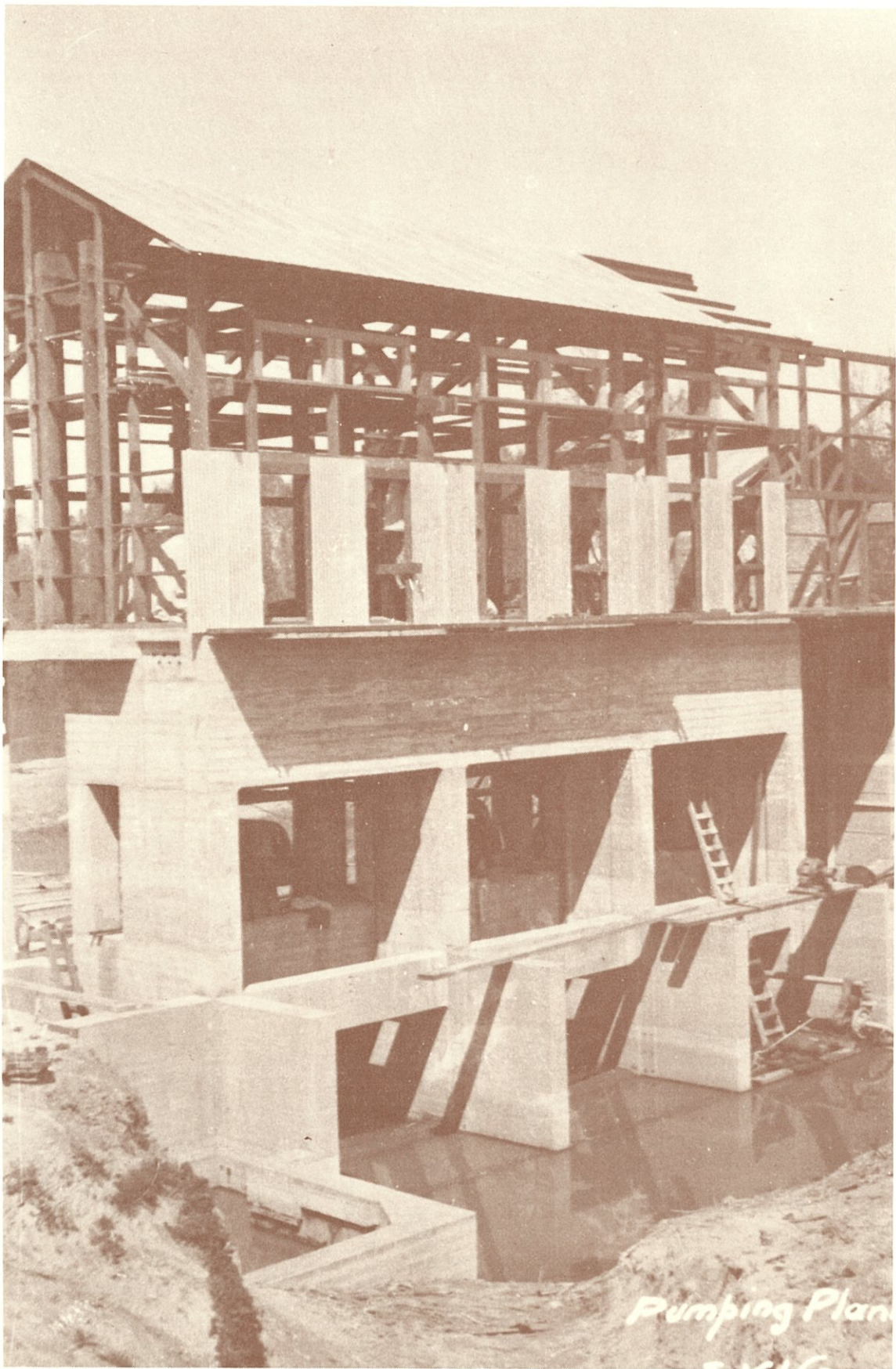
Construction of pumping plant at headgates, October 1910



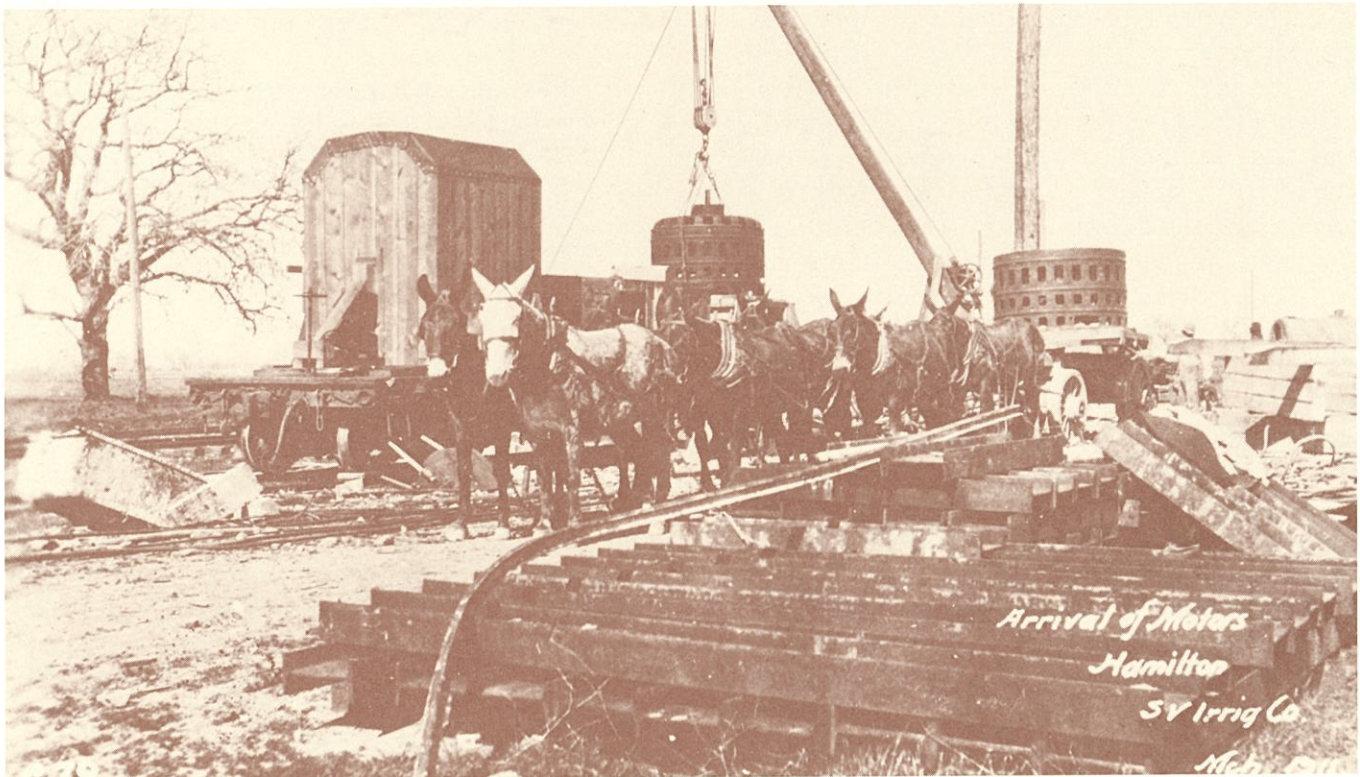
Pouring concrete at pumping plant, December 1910
(Courtesy of Special Collections, Meriam Library, California State University, Chico)



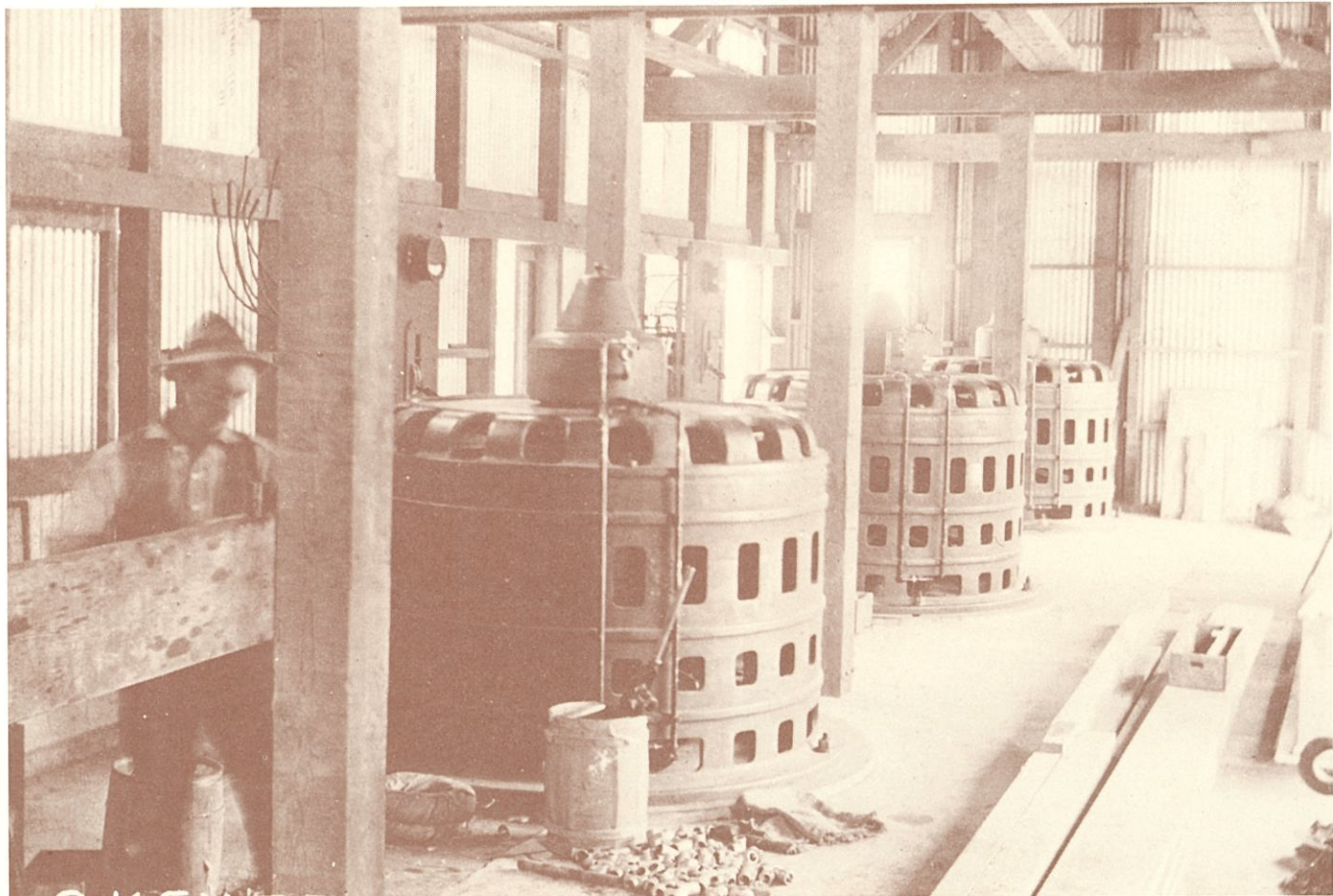
*Overview of pumping plant, canal and work camp, January 1911
(Courtesy of Special Collections, Meriam Library, California State University, Chico)*



*Pumping plant superstructure under construction
(Courtesy of Special Collections, Meriam Library, California State University, Chico)*



Arrival of motors for pumps, March 1911



Interior view of motors at pumping plant

The whole project seemed to be progressing smoothly when W.S. Kuhn visited the area in July of 1911. At that time approximately 40,000 acres of land had been sold and the number of homesteaders was estimated to be between 700 and 800. Kuhn expressed his satisfaction with the development and predicted even greater increases in immigration for the future. The reasons he gave for this prediction were the depression that was taking place in the eastern manufacturing centers and the completion of the Panama Canal which would improve shipping to the eastern and international markets.⁶⁰ The Twin Falls, Idaho, project had been successfully completed and there seemed to be no reason for the syndicate's methods not to succeed in the Sacramento Valley Irrigation Project.

Despite the Kuhn's confidence in their methods and previous experience at western development, work on the project was reduced to a small scale in late 1912 and 1913. The reason for this was the July, 1913, failure of the Kuhn's First-Second National Bank in Pittsburgh which threw the American Waterworks and Guarantee Company into receivership. The *Literary Digest* that month described the "crash" as:

. . . one of the largest, if not the very largest failure for a national bank. An amount totaling between \$155,000,000 and \$175,000,000 in bank resources, bonds, and stock of over forty public utility companies and the finances of a private banking house. . . are involved in the collapse of the firm of brothers, J.S. and W.S. Kuhn.⁶¹

The Philadelphia Record reported that:

Nine banks out of ten that fail are wrecked by loaning too much to a single debtor, and this single debtor is very generally the principal owner of the bank, who is interested in waterworks, terminal railroads, woolen-mills, or whatnot. No bank, said *The Record*, should put many of its eggs in the president's basket.⁶²

The offices of the Sacramento Valley Irrigation Company were temporarily closed after the collapse of the Kuhn interests in order to provide time to arrive at some sort of solution regarding the future of the project to be arrived at. Local offices were reopened the following month, August 1913, when it was determined that the bondholders would take possession of the Sacramento Valley Irrigation Company's holdings and assume the responsibility for the management of the partially completed undertaking.⁶³

The chances for financial success and the continued delivery of water were slim. Thousands of acres of land remained unsold and the Sacramento Valley West Side Canal Company was still financially dependent upon the Sacramento Valley Irrigation Company. At this time the canal company was delivering water to less than 16,000 acres, most of them within the 12,000 acre Jacinto tract⁶⁴ (which had been the first area to be extensively developed), and was involved in various law suits over water rights disputes. The Sacramento Valley West Side Canal Company cost the bondholders nearly \$100,000 a year to



Temporary camp of Sacramento Valley Irrigation Company settlers
(Courtesy of Erwin Page)



Woman with poultry in Jacinto area



The Pelko residence under construction



Barn and dairy herd of N. E. Mulick



U.S. Rural Mail Delivery



The Otterson family at work as house nears completion



Wooden farm irrigation delivery structures



Flood irrigation in progress
 (Courtesy of The Museum, Willows)

maintain and operate, making it a losing proposition.⁶⁵ So, once again the irrigation system was mired in difficulties with no clear cut way out of the situation.

Ironically, a series of adverse legal decisions was once again to play a major role in the final demise of yet another irrigation company. The Sacramento Valley Irrigation Company had accepted the liabilities of the Central Canal and Irrigation Company upon acquiring that company's holdings in 1909, and had subsequently been named as one of the defendants in the Beckwith case, which had been pending since November of 1903. It was not until July, 1913, that a final decision was rendered in favor of Beckwith (his son had continued the fight after Beckwith's death), for the sum of \$50,000, plus compound interest, for the seven years the case had been in the courts. The final amount of this settlement was \$87,116.⁶⁶

Although the decision in the Beckwith case cost the Sacramento Valley Irrigation Company a great deal of money, it was litigation over the company's right to divert and distribute water that led to the most serious difficulties. The Sacramento Valley Irriga-

tion Company had filed eminent domain proceedings in 1909 to secure the rights-of-way necessary to complete the main canal. One defendant demurred "on the ground that the Canal Company under its articles of incorporation was not a public utility, and hence had no right to exercise the power of eminent domain."⁶⁷ When this demurrer was sustained, the Sacramento Valley West Side Canal Company had amended its articles of incorporation to grant it the powers of a public utility and taken over the service obligations of the Central Canal and Irrigation Company. The Sacramento Valley Irrigation Company maintained its status to be that "of a mutual water company bound to serve only the lands owned or sold by it."⁶⁸ The Sacramento Valley West Side Canal Company was not to irrigate "any lands not owned or controlled by the Sacramento Valley Irrigation Company, unless those lands shall first pay for the privilege of irrigation, a bonus, or water right, as it is called, of at least \$75.00 an acre," according to an agreement between the two companies. The Sacramento Valley West Side Canal Company delivered water on that basis until 1911, when:

certain owners of the lands not controlled by the Sacramento Valley Irrigation Company

who had no contract from the old Central Canal and Irrigation Company for water delivery, demanded irrigation service on the grounds that the Sacramento Valley Irrigation Company was a public utility.⁶⁹

L.T. Byington, and other Williams area landowners within the boundaries of the Central Irrigation District, filed suit against the Sacramento Valley Irrigation Company and the Sacramento Valley West Side Canal Company on the grounds that the terms of the Central Irrigation District's lease were not being met. They held that the Sacramento Valley Irrigation Company was "bound by all the terms of the lease and that it was not permitted to serve lands outside the original boundary of the Central Irrigation District."⁷⁰ The Sacramento Valley Irrigation Company used the Supreme Court decision regarding the illegal formation of the Central Irrigation District to deny the existence of the Central Irrigation District, the existence of a valid lease and the fact that it was a tenant.

The decision rendered by the Supreme Court in 1913 upheld all of the "Byington's claims holding that the Canal Company was tenant and bound by the terms of the lease, and that it could not deliver water to lands outside the Central District,"⁷¹ until the demand for water within the district had been fully met. This meant that portions of the canal would need to be constructed in order to provide some of the lands of the Central Irrigation District with water and that the lands not in the Central Irrigation District, such as the Jacinto, Princeton and Provident tracts, were no longer entitled to water from the canal system although they had been receiving it for several years.

The decision was challenged by the Sacramento Valley Irrigation Company, but the final decision made on April 29, 1915 by the Supreme Court held among other things:

. . . that lands within the old Central Irrigation District constitute the primary territory to which the original public use contemplated by the district and by the grant of congress extends and continues, and that when demanded such lands must be served with water from the new system before it can lawfully be taken for use on outside lands.⁷²

Unfortunately, those hardest hit by the Kuhns downfall were the small landowners, "many of whom were doomed to lose both their land and investment."⁷³ Some of these settlers persevered, holding onto their lands and actively working for an irrigation system that would provide ample water for their needs. Committees were formed and meetings were held throughout the area in an effort to determine what options were available to them. The Jacinto Business Association of Farmers organized an investigating committee to compile a report on the situation, which was printed in a local newspaper in June of 1915. The final recommendation of the committee was that the people should organize themselves and purchase the irrigation system from the bondholders who were anxious to dispose of the system.⁷⁴

A decision made by the California Railroad Commission (which served as the Public Utilities Commission at that time), concurred with the recommendation of the Jacinto Business Association's Investigating Committee. Various disputes over the water rates being charged had been placed before the Railroad Commission and on June 14, 1915, a final decision was rendered. The Railroad Commission's decision held the Sacramento Valley West Side Canal Company to be engaged in public service, and so altered the basis of water distribution, that the only feasible solution appeared to be the reorganization of one or more new districts.⁷⁵

The California Railroad Commission concluded its decision with the following:

In this opinion the situation has been examined and the facts have been set forth in much greater detail than would otherwise have been done, for the reason that the Commission desires to do all in its power to state the facts clearly to the people of Glenn and Colusa Counties, so that they may have a solid foundation on which to set in case they should desire themselves to acquire and operate the Sacramento Valley West Side Canal Company's water system. Attention has been drawn to the fact that it has generally been found desirable in the development of large irrigation projects in California to form an irrigation district, so that the entire land in the district, the value of all of which is enhanced by the possibility of securing water, may bear its fair share of the burdens of the system, particularly during the

early years when the revenues are always insufficient to run the system. If the people of Glenn and Colusa counties should in their wisdom adopt this solution of the extremely difficult problem which has confronted them for more than thirty years, and if the facts herein presented in considerable detail shall prove to be of assistance in this undertaking, the Commission will feel that its labors in these cases have not been in vain.⁷⁶

The bondholders and officials of the Sacramento Valley West Side Canal Company were anxious to dispose of the system. They could see absolutely no way in which the company could continue to operate under the recent legal decisions and profit. It was now up to the people of Glenn and Colusa counties to find the means to acquire the canal system and restore the plans of Will S. Green to supply water to all the lands of the district in the best interests of the people.



Footnotes

1. Sacramento Valley Irrigation Report #32: *Miscellaneous Reports & Data, 1908-1909*, Ryan letter.
2. Mark Bennett, "The Pittsburg Syndicate's Latest," *Sunset*, January 1910, p. 102.
3. "Explaining the Pittsburg Crash," *Literary Digest*, July 19, 1913, p. 85.
4. *Ibid.*
5. *Ibid.*
6. Bennett, "The Pittsburg Syndicate's Latest," *Sunset*, January 1910, p. 102.
7. *Literary Digest*, July 19, 1913, p. 85.
8. *Ibid.*
9. Bennett, "The Pittsburg Syndicate's Latest," *Sunset*, January 1910, p. 102.
10. *Ibid.*
11. Mark Bennett, "A New Way to Clear Land for Homes," *Sunset*, March 1910, p. 359.
12. Sacramento Valley Irrigation Company #32: *Miscellaneous Reports & Data, 1908-1909*, Section 8.
13. S. Glen Andrus, "The Nile of the West," *Sunset*, May 1911, p. 478.
14. Bennett, "The Pittsburg Syndicate's Latest," *Sunset*, January 1910, p. 103.
15. Sacramento Valley Irrigation Company Minute Book, 1909-1913, p. 43.
16. Fred H. Tibbetts, *Report to Board of Glenn-Colusa Irrigation District, Willows, Cal., on the Acquisition and Extension of the Sacramento Valley West Side Canal*, April 1920, p. 30.
17. Charles F. Lambert on *Land Speculation and Irrigation Development in the Sacramento Valley, 1905-1957*, an interview conducted by Willa Baum, University of California, General Library, Regional Cultural History Project, (Berkeley, 1957), p. 65.
18. Fred H. Tibbetts, *Report to Mr. C. Coldwell on Reorganization of Central Irrigation District*, Reorganization section.
19. Lambert, p. 64.
20. Bennett, "A New Way to Clear Land for Homes," *Sunset*, March 1910, p. 359.
21. *Willows Semi-Weekly Journal*: "A Big Land Deal in Colusa County Yesterday," Aug. 13, 1909, p. 1; "Pittsburgh Company Will Advertise Whole Valley," Nov. 12, 1909, p. 1; "Syndicate Buys Colusa County Lands," Feb. 8, 1910, p. 4.
22. Lambert, p. 66.
23. Bennett, "The Pittsburg Syndicate's Latest," *Sunset*, January 1910, p. 102.
24. *Willows Review*, November 26, 1909, p. 2, column 1, item 1.
25. Bennett, "A New Way to Clear Land for Homes," *Sunset*, March 1910, p. 359.
26. Tibbetts, *Report to Board of Directors, GCID*, April 1920, p. 29.
27. Sacramento Valley West Side Canal Company Minutes, p. 1.
28. Tibbetts, *Report to Board of Directors, GCID*, April 1920, p. 30.
29. Sacramento Valley Irrigation Company, *Engineering Report: 1908-1909*, Letter from Fentress Hill to W.S. Kuhn, April 22, 1909.
30. *Ibid.*
31. "A Big Land Deal in Colusa County Yesterday," *Willows Semi-Weekly Journal*, August 13, 1909, p. 1.
32. "Willows Greets President W.H. Taft—Five Minute Talk on Irrigation Pleases Crowd," *Willows Semi-Weekly Journal*, October 5, 1909, p. 1.
33. Charles Davis McComish, *History of Glenn and Colusa Counties, California*, (Los Angeles, California: Historic Record Company, 1918), p. 231.
34. "Pittsburg Company Will Advertise Whole Valley," *Willows Semi-Weekly Journal*, November 12, 1909, p. 1.
35. Bennett, "The Pittsburg Syndicate's Latest," *Sunset*, January 1910, p. 103.
36. Lambert, p. 69.
37. Bennett, "The Pittsburg Syndicate's Latest," *Sunset*, January 1910, p. 101.
38. Map of Kuhn California Project, Sacramento Valley Irrigation Company Brochure.
39. Sacramento Valley Irrigation Company Brochures & maps of various units.
40. Bennett, "A New Way to Clear Land for Homes," *Sunset*, March 1910, p. 362.
41. Bennett, "The Pittsburg Syndicate's Latest," *Sunset*, January 1910, p. 103.
42. Bennett, "A New Way to Clear Land for Homes," *Sunset*, March 1910, p. 361.
43. Andrus, "The Nile of the West," *Sunset*, May 1911, p. 486.
44. Sacramento Valley Irrigation Company Report #32: *Miscellaneous Reports & Data, 1908-1909*, Section 10.
45. Lambert, p. 70.
46. "Eastern Millionaires Visit this Section," *Willows Semi-Weekly Journal*, February 15, 1910, p. 3.
47. Bennett, "A New Way to Clear Land for Homes," *Sunset*, March 1910, p. 361.
48. *Willows Review*, March 4, 1910, p. 3, column 2, last item.
49. *Wagon Wheels*, September 1976, Volume XXVI, Number 2, p. 21.
50. *Willows Review*, April 5, 1912, p. 3, col. 1, last item.
51. *Wagon Wheels*, September 1976, p. 21.
52. *Ibid.*
53. *Wagon Wheels*, February 1960, p. 16.
54. "Pittsburg People Buy Another Ranch," *Willows Semi-Weekly Journal*, August 24, 1909, p. 1.
55. Bennett, "A New Way to Clear Land for Homes," *Sunset*, March 1910, p. 360.
56. *Ibid.*
57. Tibbetts, *Report to Mr. C. Coldwell*, p. 34.
58. *Ibid.*
59. "Pumps Given a Tryout," *Tri-Weekly Colusa Sun*, June 24, 1911, p. 1.
60. "W.S. Kuhn Returns Home," *Tri-Weekly Colusa Sun*, July 25, 1911, p. 2.
61. "Explaining the Pittsburg Crash," *Literary Digest*, July 1913, p. 85.
62. *Ibid.*
63. "Kuhn Project Reopens Offices," *Daily Colusa Sun*, August

- 26, 1913, p. 1.
64. Cecile Cramer, "Will S. Green's Vision: Glenn-Colusa District Advances a Bold Dream," *Willows Daily Journal*, September 30, 1977, section B.
 65. Jacinto Business Association Minutes, 1912-1915.
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 67. Tibbetts, *Report to Board of Directors, April 1920*, p. 31.
 68. Cramer, "Will S. Green's Vision," *Willows Daily Journal*, September 30, 1937, section B.
 69. *Ibid.*
 70. Notes on Right of Central Irrigation District to Canal.
 71. *Ibid.*
 72. Tibbetts, *Report to Mr. C. Coldwell*, p. 32.
 73. Cramer, "Will S. Green's Vision," *Willows Daily Journal*, September 30, 1977, section B.
 74. Jacinto Business Association Minutes, 1912-1915.
 75. Tibbetts, *Report to Mr. C. Coldwell*, p. 33.
 76. Tibbetts, *Report to Board of Directors, GCID, April 1920*, p. 33.

The Organization of the Glenn-Colusa Irrigation District



The state of affairs of the irrigation system became increasingly complicated during the years 1915-1919. The Sacramento Valley West Side Canal Company was operated under the direction of a Federal Receiver, with water rates fixed by the State Railroad Commission, during these years.¹ The flat rate for water had been fixed at \$7 per acre per year for rice and \$2 a year for all other crops in the 1915 decision. These rates were not subject to change without the approval of the Railroad Commission.²

This situation led to difficulties when the demand for water greatly increased with the planting of larger acreages to rice, which required a great deal more water than the other types of crops grown in the area. The prices and need for rice had greatly increased as a result of World War I. Farmers realized that rice could be grown successfully on the heavy clay and alkaline soils that had previously been considered worthless, and many switched their attentions to raising the crop. The Sacramento Valley West Side Canal Company was unable to meet the increased demands and protested that they could not raise the water rates to finance the construction necessary to supply more water.

William F. Fowler, the receiver for the Sacramento Valley West Side Canal Company, filed a petition in the United States District Court asking for "an order to restrain the Railroad Commission from putting into effect the rates established."³ The request was not only denied, but the Sacramento Valley West Side Canal Company was ordered by the Railroad

Commission to make the necessary addition to their plan to irrigate 10,000 more acres as asked by the growers.

Fowler evidently did not comply with this order and farmers were concerned that the 10,000 acres of rice would be lost if they did not receive more water. When the situation was brought to the attention of the Railroad Commission and the California food administrator, Ralph P. Merritt, an investigation into the management of the Sacramento Valley West Side Canal Company was ordered.

The investigation confirmed that a serious rice water shortage did exist. It was determined to take control of the system and to replace Fowler as manager on June 26, 1918. An engineer was also appointed, to take control of the pumps and the construction of a temporary diverting dam at the headgates, in order to get water down the canal at once.⁴ In late August, Alger C. Fast, a Los Angeles banker and manager of a large southern estate, was appointed to replace Fowler and assumed control of the irrigation company.⁵

Due to the rapid extension of rice irrigation there continued to be an unprecedented demand for water which the Sacramento Valley West Side Canal Company was unable to meet without additional construction. It became increasingly apparent to the landowners that complete reorganization would be necessary in order to insure enough water for the expanding agricultural industry. The advantages of a public irrigation district seemed obvious: "the district raised money and built its facilities through common taxation, and democratic organization assured local responsi-

the purchase of the canal system and was signed by nearly eighty landowners. Some of the reasons given for their opposition included: fear that marketing conditions for rice would fall after the war, unwillingness to place lands under a bonded indebtedness, and reluctance to pay for maintenance on the system or anything other than the water itself.

Ernst Behr, the agent for the Spalding Land Company, was one of the most active opponents of the district. The company owned over 10,000 acres of land within the proposed boundaries that were primarily leased to rice growers. The Spalding Company strongly objected to paying any assessments on that land and Behr wrote several editorials defending their position for the local newspapers.

Charles Lambert responded to these editorials, and the exchange became quite a heated one. Lambert was quoted as saying, "...I will prove to you that the leading objector, Ernst E. Behr of the Spalding Company, has an axe to grind and is attempting to grind it upon your stone." Behr replied with an editorial titled, "Replying to Mr. Lambert's Statement, or Rather His Misstatement of Facts," to which Lambert answered with, "Comments on Confession of Ernst E. Behr, Agent, Employee and Individual."¹⁸

The exchange would probably have continued had the issue not been successfully resolved by the Organization Committee's decision to exclude all objectors if they so desired. Lambert made the following statement explaining the new policy:

...in determining the boundary lines of the proposed district all lands were included within the Old Central Irrigation District that have been receiving water and were not receiving water from another source; that it is the policy of the Organization Committee to exclude any lands within the proposed district as shown on the map upon application or objection of the owners of land who do not want water for their lands and are opposed to the formation of the district.¹⁹

This was further emphasized when the committee accepted the applications for some large landholdings not included within the proposed boundaries. These landowners expressed the desire to be added to the district and were willing to pay any extra costs in-

curred in delivering water to their lands.²⁰ This tactic insured the success of the organization proceedings as it made it possible to secure the necessary signatures for the petition.

Most of the objecting landowners gave in gracefully and had their lands included within the district boundaries when they realized that the Glenn-Colusa Irrigation District was going to be organized despite their protests. Even the most formidable opponent of the district, Ernst Behr, requested that the Spalding Company's lands be included within the district boundaries. He also asked that other landowners who had wished to be excluded from the district be given the opportunity to change their minds and come back into the district. Behr's acceptance of the plan, and the lack of continued opposition, virtually guaranteed the successful outcome of this stage of the undertaking.

One man expressed his satisfaction with the proposed district, in saying:

This county was set back thirty years by a lot of honest but misguided old time wheat and barley ranchers fighting the canal and finally causing the dissolution of the old district after a long and expensive legal fight. I consider this the opportune time for taking over the Central Canal. I don't believe the cost will be a burden to anybody and when the bonds have been retired the system will belong to the landowners who otherwise would simply have been paying rent during that time.²⁴

The executive committee arranged to lease the canal system for the 1920 season, at a cost of \$5,000 a month. This step was taken because there was not enough time to finalize the negotiations and issue bonds before beginning the construction to increase the capacity of the system. The petition for the organization of the Glenn-Colusa Irrigation District was found "sufficient and fully qualified under the law," by the County Board of Supervisors on December 22, 1919, and the work of enlarging the system was undertaken immediately.²³

Durbrow, Hankins, and D'Egilbert (the members of the executive committee), formed a trusteeship in order to expedite the financial transactions necessary to begin construction. Lambert had contacted a former railroad contractor and earth mover by the name of Ed

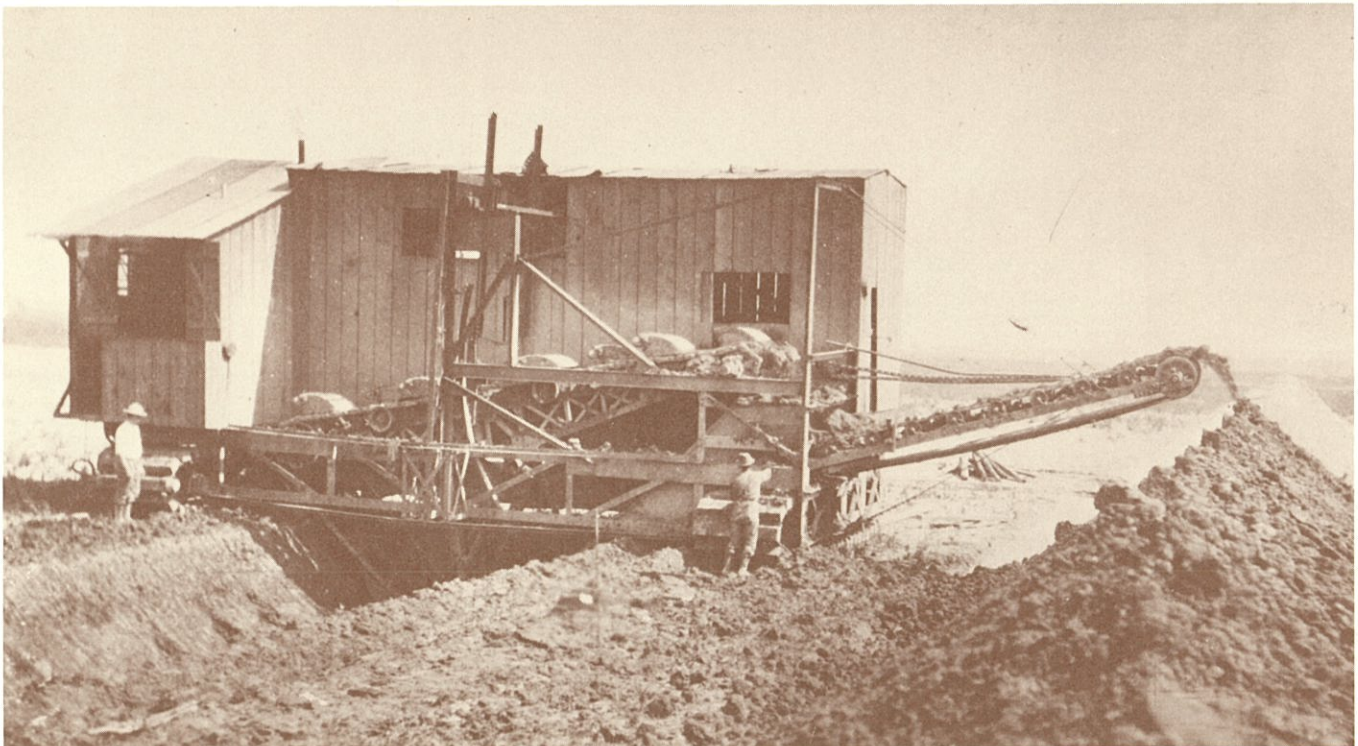
Shattuck, who proposed to do the construction work on a cost-plus basis. The trustees agreed to pay the Shattuck Construction Company their costs plus 15% for their equipment, operation, and management of the project.²⁴

It was up to Lambert and the trustees to raise \$100,000 by January 10, 1920, and have it deposited in the bank ready for the use of the construction company. This was accomplished by asking members of the community to contribute sums of \$5,000, \$10,000, or \$25,000, in exchange for receipts which would guarantee return of the money to them when the bonds were issued.

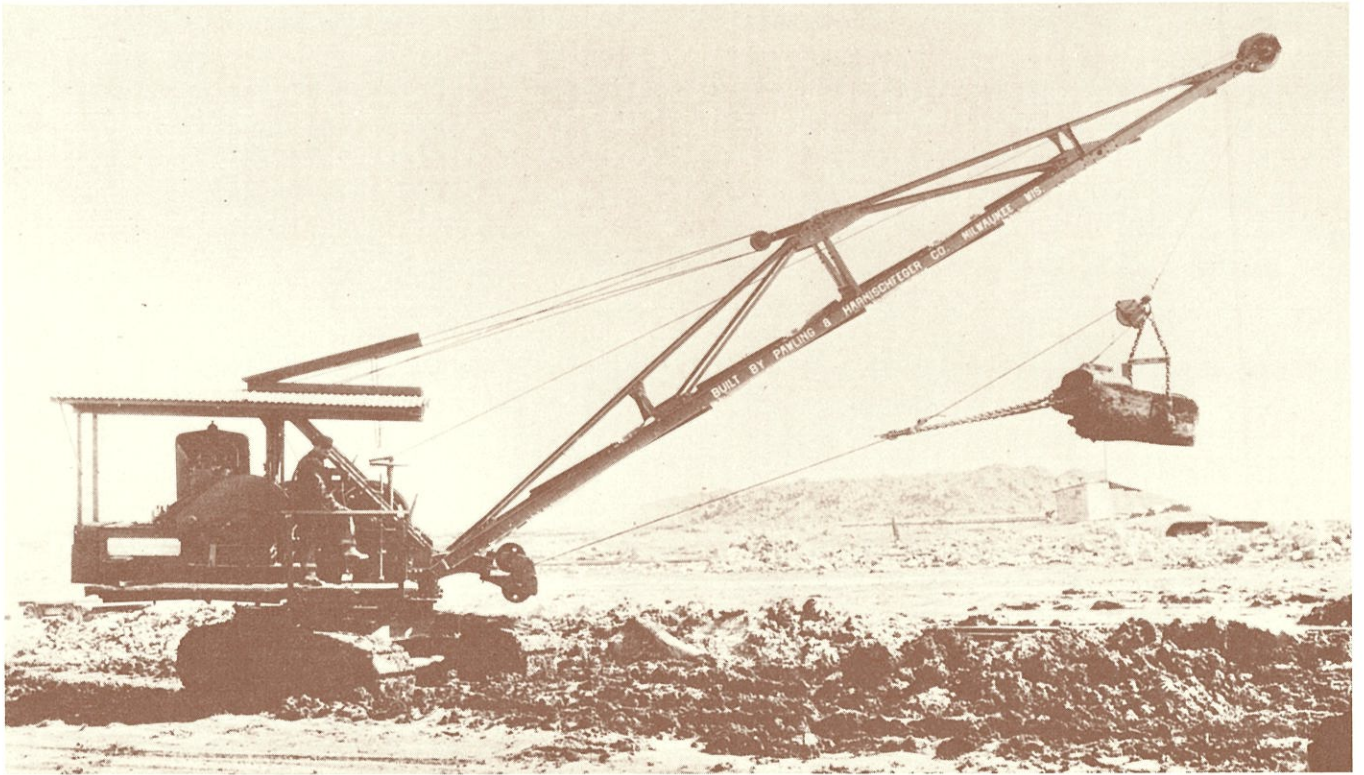
The large landowners who had made such huge profits on the rice crop of 1919 were anxious to insure a sufficient water supply and were more than willing to contribute large sums of money for this purpose. Some of the larger business interests of Willows and Colusa were also called upon to subscribe to the fund. A few of those contributing were: the Bank of Willows, First National Bank,

Glenn County Savings Bank, Colusa Implementation Company, Hochheimer and Co., Owl Service Station, and the Glenn Transcript.²⁵ Raising the money became a spirited community enterprise; eventually \$300,000 was collected. According to the Glenn Transcript it was, "the first time in the history of Glenn and Colusa counties that a united front on any public enterprise has been secured."²⁶

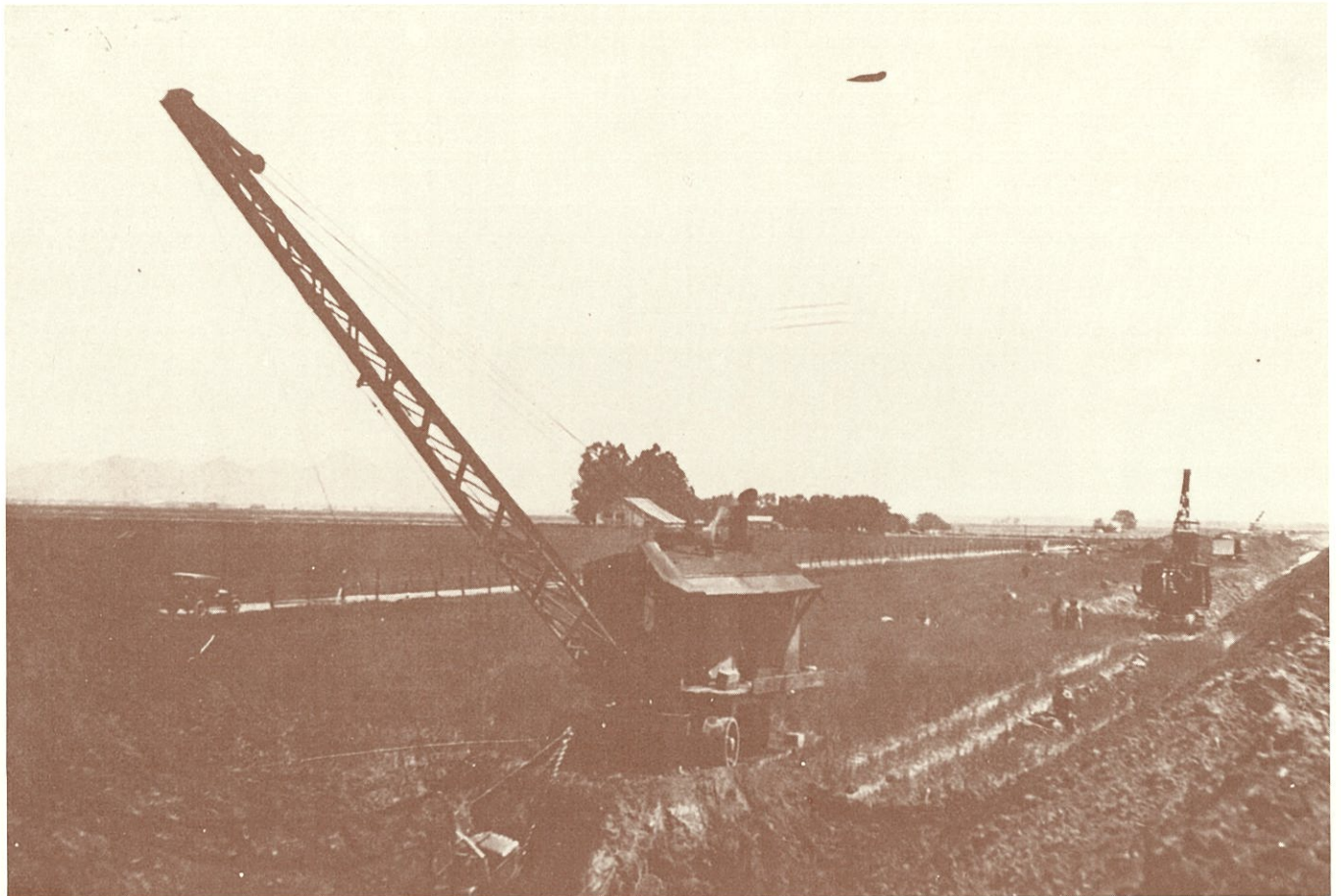
The planned construction consisted primarily of the enlargement of the main canal, to raise the capacity from approximately 900 cubic feet per second to 1,700 cubic feet per second, along with the installation of efficient new pumps. The Jacinto Irrigation District contracted to buy 150 cubic feet per second of this additional supply, as they had an interest in the upper end of the canal and a separate pumping plant with which to distribute the water. The Glenn-Colusa Irrigation District would have a total supply of approximately 1,550 cubic feet per second once the reconstruction was completed.²⁷



Bucket conveyor excavator



Dragline excavation



Draglines constructing main canal



Steam dragline excavating canal

The Shattuck Construction Company owned a great deal of equipment enabling them to begin operations in a big way. A shipbuilding camp was established and operated twenty-four hours a day for the purpose of constructing eleven hulls to support diesel clamshell dredgers. These floating dredgers were used to deepen the canal from the headgates to a

point south of Willows. To allow passage it was necessary to remove and rebuild bridges and central portions of the check gate structures in the segments of the canal to be enlarged.²⁸ The dredgers were used for the removal of about 1,100,000 cubic yards, beginning in January and continuing through the most of the irrigation season.²⁹



The Dredge "Delevan" cleaning Intake Channel, on June 27, 1918



Diver inspecting channel for snags, from Dredge "Delevan"

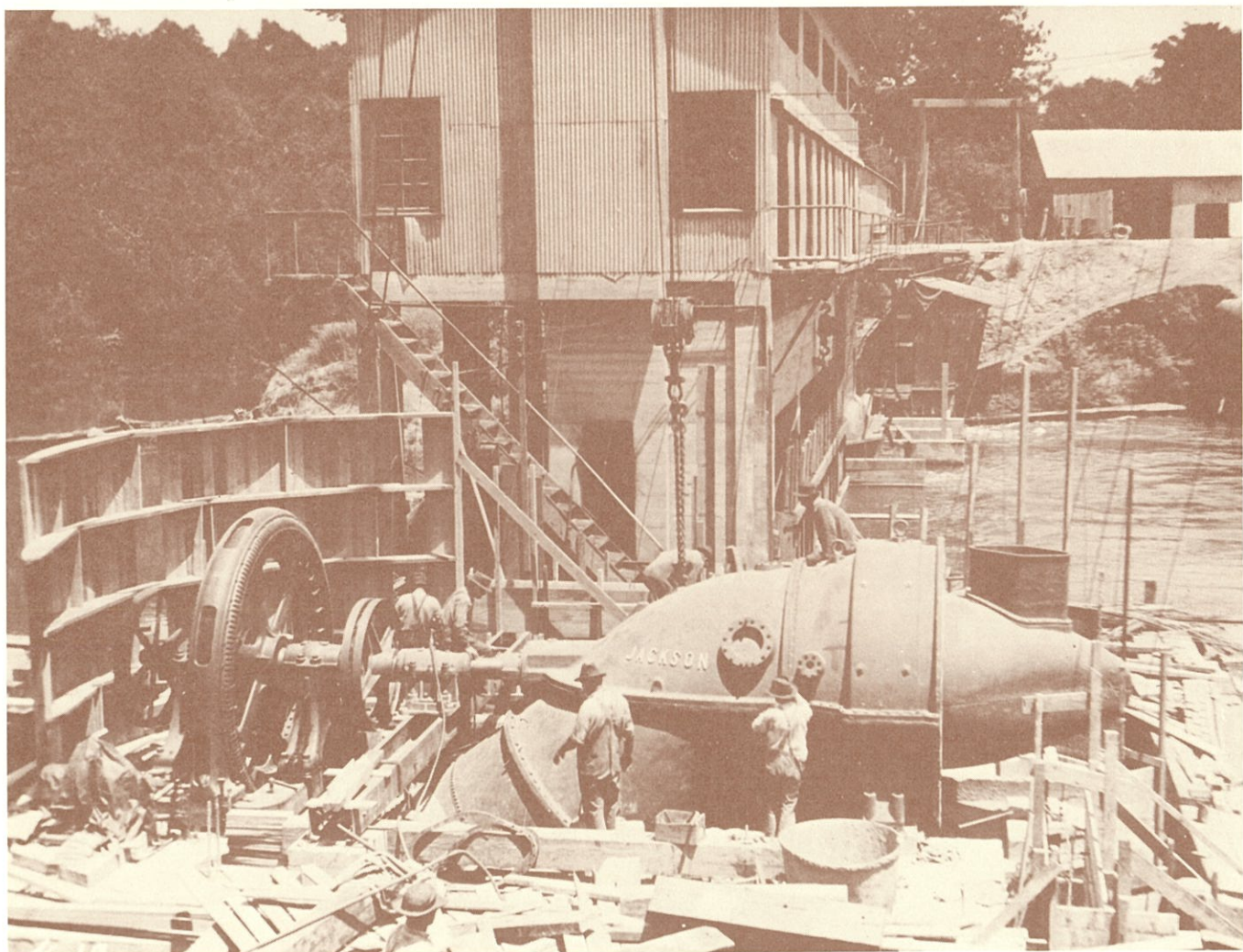
Construction of a new pumping plant, consisting of three large Wood screw pumps, was to be undertaken at the west end of the existing building. This was the same type of pump design used by the City of New Orleans for pumping the underground seepage water from beneath the city. The pumps were known as Wood screw pumps because they were designed by a man named Wood. Lambert and the engineer traveled to meet with Wood in order to obtain his permission to have the Byron Jackson Company build screw pumps for Glenn-Colusa Irrigation District. He agreed, and three pumps, six feet in diameter, were immediately ordered from the Byron Jackson Company. Three 350-horsepower induction motors to operate the pumps were commissioned from the General Electric Company.³⁰ The pumps and motors were installed and put into operation almost immediately, as the unusually dry season of 1920 made it necessary for many farmers to begin irrigation of their crops in February.



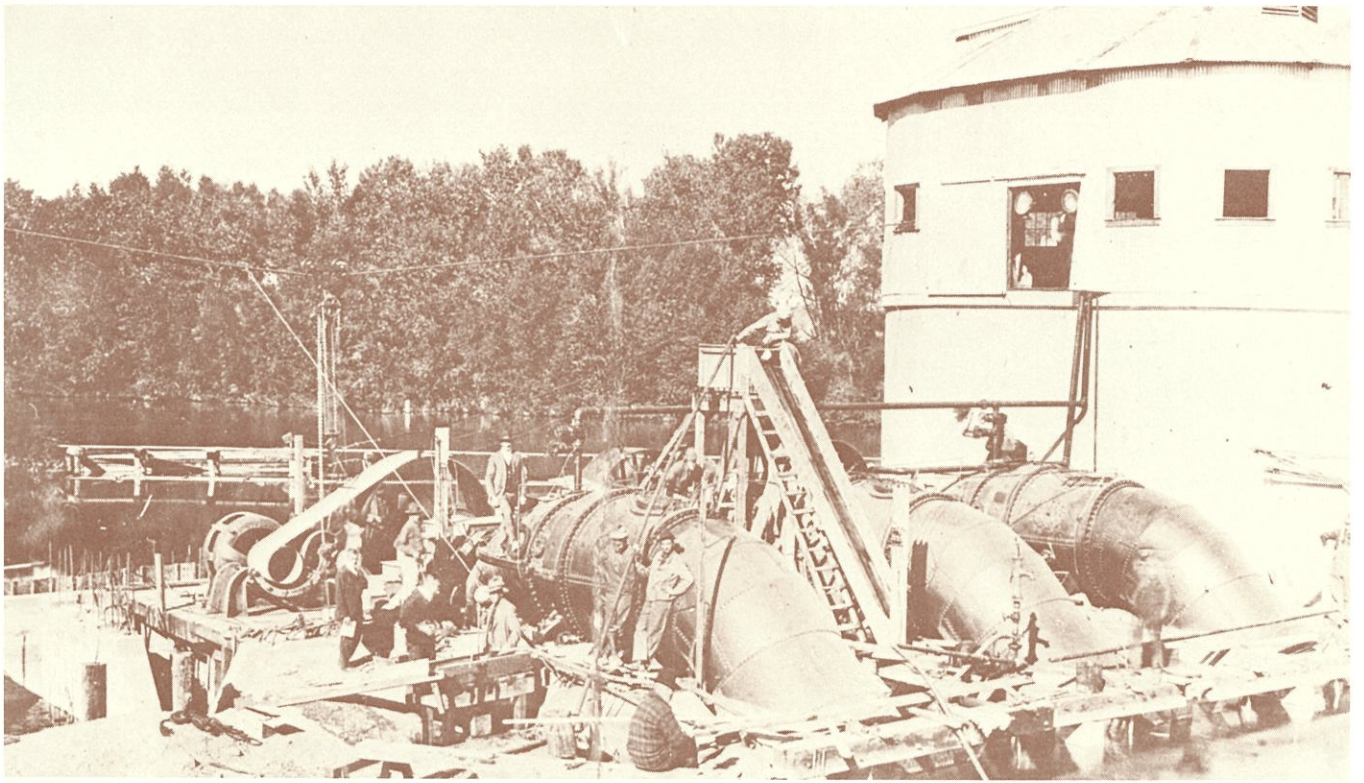
Timber check structure, January 18, 1920



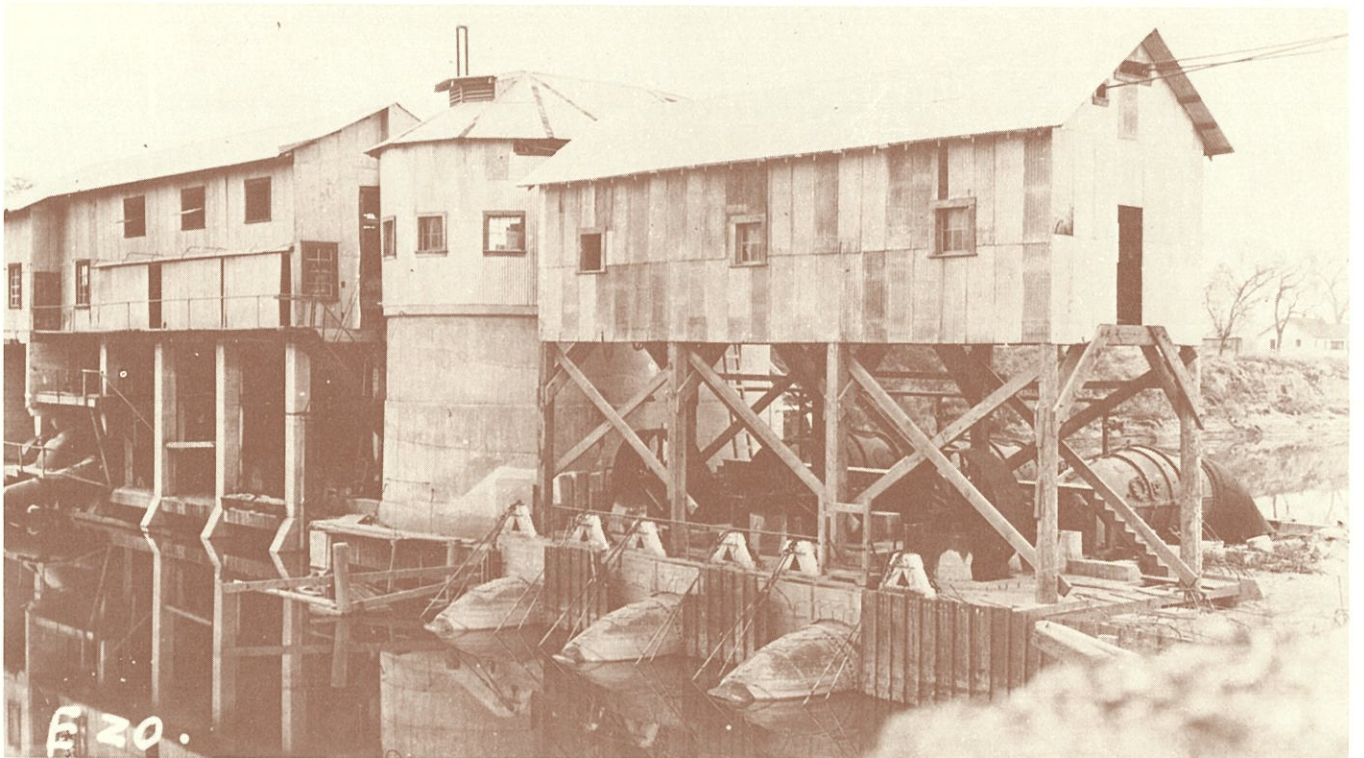
View of pumping plant, derrick and steam pile driver, June 13, 1919



Crew installing Byron Jackson pump, largest in world at time of installation (100" discharge)



Installation of Wood screw pumps nearing completion



Pumping plant with elevated house for 72" Wood screw pump upon completion

EMERGENCY MEASURES



Dredge "Gibson" closing gap in canal (named after Director Gion Gibson)

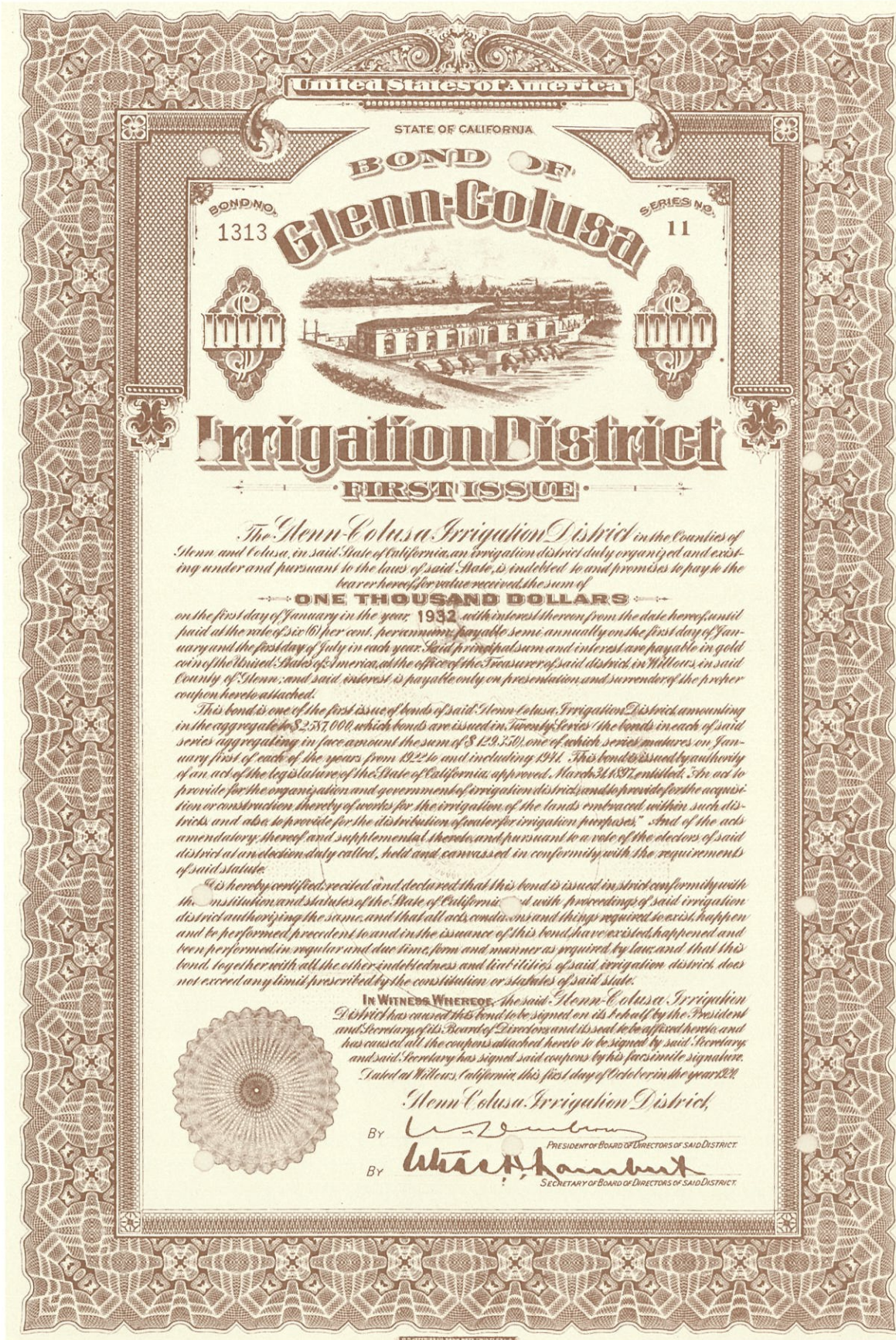
Charles Lambert was the subject of an oral history titled, *Land Speculation and Irrigation Development in the Sacramento Valley, 1905-1957*. The interview was recorded and transcribed by Willa Baum, of the University of California Regional Cultural History Project, and contains many interesting recollections of Lambert's experiences with the Glenn-Colusa Irrigation District. His description of the unique emergency measures employed to repair canal breaks during the 1920 irrigation season is quite interesting.

The additional capacity of the canal system created major problems because the banks of the canal had never been completely saturated. Vermin holes riddled the banks, permitting water to seep into the interior core of the bank, which caused major breaks in the main canal.

All repairs had to be conducted with the water still flowing as the pumps were operating at full capacity and could not be shut

down. Telephone poles were secured at locations where there were dangers of possible breaks, and twenty foot long "2 X 6's" were stacked along the canal bank. Dredgers were on standby and the canal was patrolled twenty-four hours a day in case a break occurred.

In the event of a break, the nearest telephone pole was floated across the break and the "2 X 6's" were placed on the pole and forced to the bottom of the canal, allowing a certain amount of water to come through. Tarps were then soaked so that they would float and were used to construct a temporary wall that allowed the crews to fill the break with thousands of sacks of dirt. These "sack dams" took the place of the bank that had washed out. Teams were then used to fill in behind the "sack dam" with heavy clay to give it weight. These emergency measures insured that irrigation water never ceased flowing while the frequent canal breaks were repaired.



United States of America

STATE OF CALIFORNIA

BOND OF

BOND NO.
1313

Glenn-Colusa

SERIES NO.
11



Irrigation District

FIRST ISSUE

The Glenn-Colusa Irrigation District in the Counties of Glenn and Colusa, in said State of California, an irrigation district duly organized and existing under and pursuant to the laws of said State, is indebted to and promises to pay to the bearer hereof for value received the sum of

ONE THOUSAND DOLLARS


on the first day of January in the year 1932, with interest thereon from the date hereof until paid at the rate of six (6) per cent. per annum, payable semi-annually on the first day of January and the first day of July in each year. Said principal sum and interest are payable in gold coin of the United States of America, at the office of the Treasurer of said district in Willows in said County of Glenn, and said interest is payable only on presentation and surrender of the proper coupon hereto attached.

This bond is one of the first issue of bonds of said Glenn-Colusa Irrigation District amounting in the aggregate to \$2,577,000, which bonds are issued in twenty series (the bonds in each of said series aggregating in face amount the sum of \$129,350), one of which series matures on January first of each of the years from 1922 to and including 1941. This bond is issued by authority of an act of the Legislature of the State of California, approved March 24, 1927, entitled, "An act to provide for the organization and government of irrigation districts, and to provide for the acquisition or construction thereof of works for the irrigation of the lands embraced within such districts, and also to provide for the distribution of water for irrigation purposes." And of the acts amendatory thereof and supplemental thereto, and pursuant to a vote of the electors of said district at an election duly called, held and canvassed in conformity with the requirements of said statute.

is hereby certified, recited and declared that this bond is issued in strict conformity with the constitution and statutes of the State of California, and with proceedings of said irrigation district authorizing the same, and that all acts, conditions and things required to exist, happen and to be performed precedent to and in the issuance of this bond, have existed, happened and been performed in regular and due time, form and manner as required by law, and that this bond, together with all the other indebtedness and liabilities of said irrigation district, does not exceed any limit prescribed by the constitution or statutes of said State.

IN WITNESS WHEREOF, the said Glenn-Colusa Irrigation District has caused this bond to be signed on its behalf by the President and Secretary of its Board of Directors and its seal to be affixed hereto, and has caused all the coupons attached hereto to be signed by said Secretary, and said Secretary has signed said coupons by his facsimile signature. Dated at Willows, California, this first day of October in the year 1927.

Glenn-Colusa Irrigation District,

By  PRESIDENT OF BOARD OF DIRECTORS OF SAID DISTRICT

By  SECRETARY OF BOARD OF DIRECTORS OF SAID DISTRICT



Glenn-Colusa Irrigation District bond, first issue, signed by William Durbrow, President of the Board of Directors and Charles Lambert, Secretary of the Board of Directors

The Glenn-Colusa Irrigation District began supplying irrigation water on February 13, 1920, just over a week prior to the official formation of the district. On Saturday, February 21, the election for the organization of the Glenn-Colusa Irrigation District was held, and passed almost unanimously, by a vote of 287 to 12.

Three directors were also elected: Gion Gibson of Williams (one of the former opponents of the district), William Durbrow of Willows, and Ernest V. Eibe of Glenn. William Durbrow was made president of the Board of Directors, and Charles Lambert was appointed construction manager and executive secretary of the district. Other elected officials were: W. K. Sutton of Maxwell, assessor; N. W. Charnley of Glenn county, treasurer; and A. J. Overpack of Glenn county, tax collector.³¹

The issuance of bonds to pay for the canal system and reconstruction work was the final step necessary to complete the organization of the district. On September 30, 1920, a bond issue of \$2,587,000 was authorized by a district vote of 166 to 6. Uncertified bonds to the amount of \$1,189,150 were immediately sold to a bond syndicate at 90, in order to return the money borrowed from the community. Certified bonds to the amount of \$1,010,000 were exchanged at par, in 1921, for the properties of the Sacramento Valley West Side Canal Company. This transaction concluded the formation of the Glenn-Colusa Irrigation District which began official operations on March 1, 1920. "After thirty years of uncertainty, the question of water for a large portion of the land of Glenn and Colusa counties, was settled . . . when the landowners voted overwhelmingly in favor of the Glenn-Colusa Irrigation District."³²



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Rice Production—Boom and Bust—Riches to Rags

The introduction of rice cultivation to the Sacramento Valley resulted in an entirely new mode of farming, which was to revolutionize land use and transform the economy of the area. World War I had created a food shortage which stimulated high prices for all irrigated farm products, particularly rice. Experimental planting had demonstrated that "rice of the short-grain Oriental varieties could, with plenty of water, be grown successfully on alkali soils which previously had been almost useless."¹ Even the former grain lands that had not been under irrigation were capable of producing high yields. Rice quickly began to overshadow all other crops such as orchards, pasture, alfalfa, sugar beets, corn, tomatoes and assorted seed crops.²

Unlike the grain crops that were planted in winter and harvested in summer, rice was planted in late spring and harvested in the fall. The first step in planting rice was the preparation of checks, which were usually surveyed and smoothed with a float or scraper. Next, the prepared acreage was seeded and germinated with the first application of irrigation water. The rice fields remained flooded throughout the growing season and required very little maintenance. Once the rice was completely ripe the fields were drained and harvest began.³

Rice harvesting was a major operation which required a large crew and the use of several types of equipment. Although the growing season seemed simple enough, the fall rice harvest could become very complicated when early rains interfered. Not only were crops damaged, but the harvest teams

and equipment were liable to sink and have difficulties in the soft, muddy fields. A binder (operated by a team of four horses until about 1918), had a sickle to cut the rice and straw, which was then conveyed into the bundling mechanism and tied into bundles of approximately ten inches in diameter. These bundles were then ejected out the side of the machine for the shocking, or tying, of five or six bundles together for drying and curing purposes.⁴ Once the shocks of rice had been allowed to dry for ten to twelve days, "wagons were used to bring in the bundles of grain and straw to a stationary thresher, or harvester, as it was then called."⁵

The job of threshing the rice was usually hired out because most farmers had not invested in this type of equipment yet. The thresher was positioned in a central location so that the shocked rice could be hauled from all sides during the course of the day's threshing; a crew of three men was responsible for transferring the wagonloads of shocks



*Sowing rice in flooded fields, prior to 1920
(Courtesy of Jack Willson & Rice Experiment Station, Biggs)*

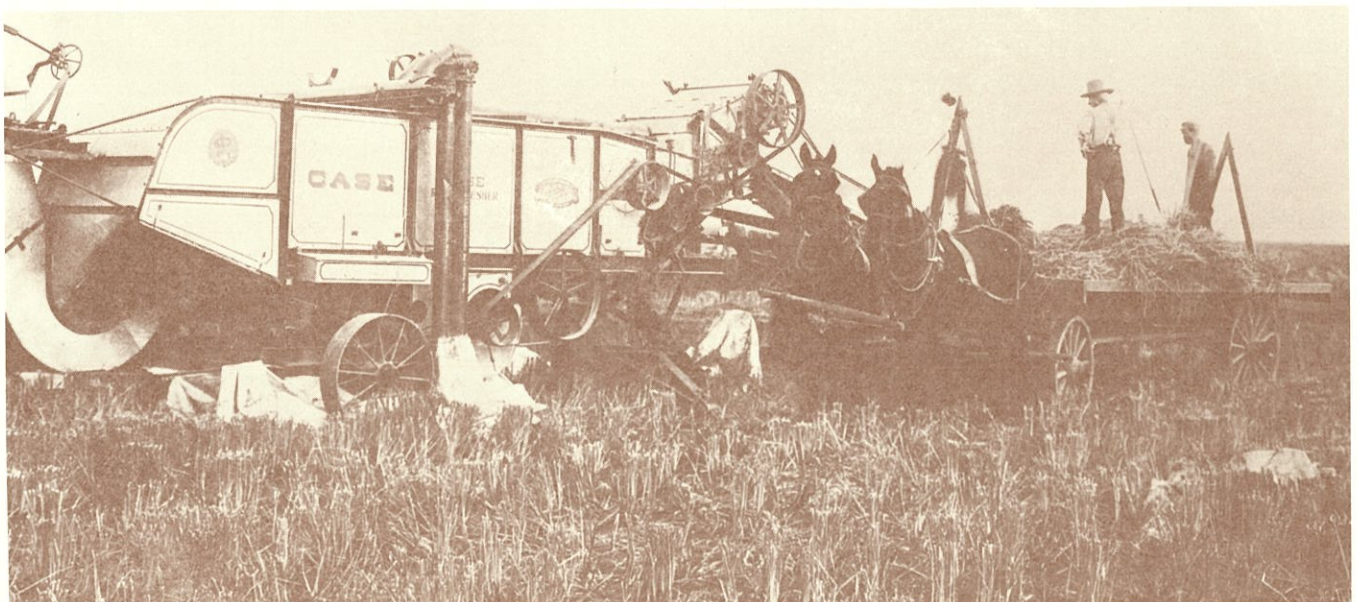


*Complete harvesting operation with thresher and sack wagons, c. 1915
(Courtesy of Jack Willson & Rice Experiment Station, Biggs)*



Work crew shocking rice, after 1917

(Courtesy of Jack Willson & Rice Experiment Station, Biggs)



Closeup of stationary harvester

(Courtesy of Special Collections, Meriam Library, CSU, Chico)



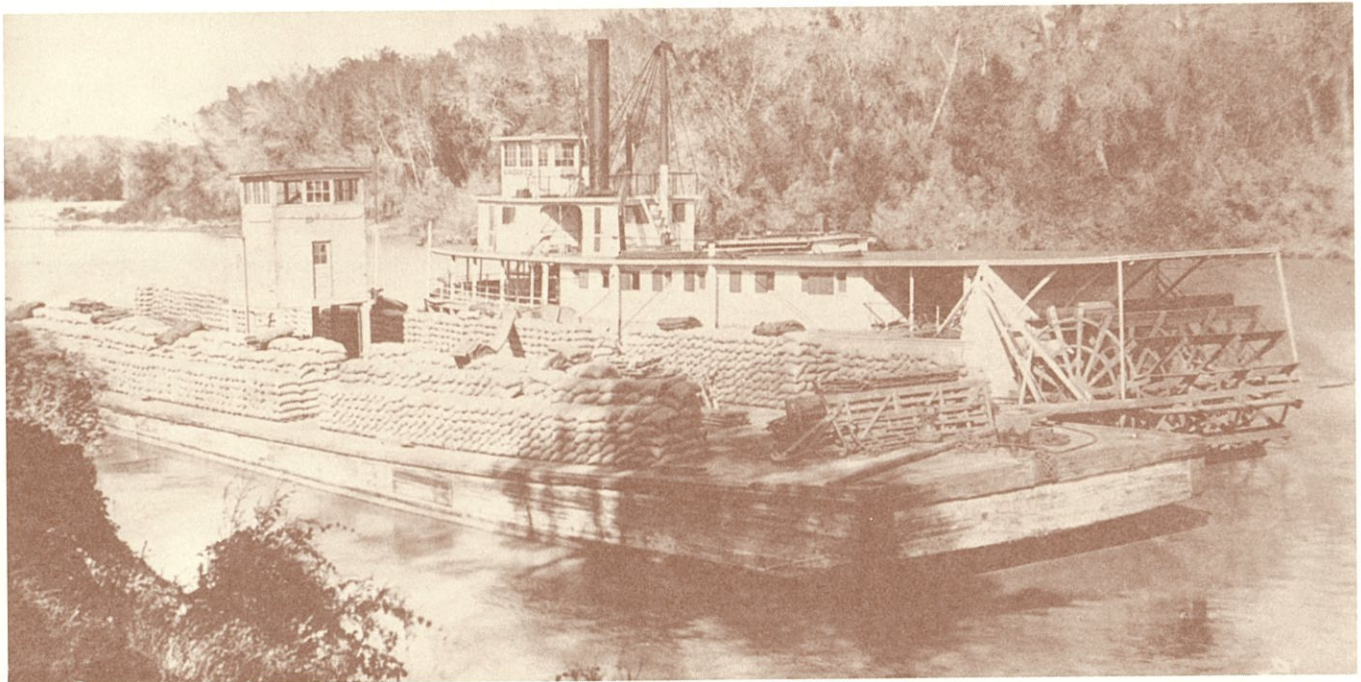
Sacking rice into 102-pound bags

(Courtesy of Special Collections, Meriam Library, CSU, Chico)

onto the machine. After the rice had been threshed it was sewn in bags and hauled to warehouses for shipment.⁶ In this manner, between ten and fifteen acres producing 800 to 1,000 bags of rice could be threshed in the course of day.⁷

Local landowners had little or no experience in the production of rice; so many of them leased their lands to Asians of various nationalities who were accustomed to the cultivation of rice. In this way landowners

became acquainted with the entire procedure and still profited. According to Charles Lambert, the typical arrangement was for the landowner to provide the land and water in exchange for a third of the total crop. In 1918 the price of rice was around \$3.50 to \$4.00 a hundred, and landowners who leased their lands received a net revenue of approximately \$50.00 an acre for land they would have sold for \$20.00 an acre, prior to the rice boom.⁸



Jacinto River Boat and Barge Alabama seen shipping rice in 1918, from Sidds Landing (Courtesy of Charles A. Henry)

The price of rice more than doubled in 1919, selling for as much as \$9.50 to \$10.00 per hundred pounds. Some growers were grossing \$500 to \$600 an acre, with water costs of only \$6 an acre. According to Charles Lambert, "a small group made more money in a short time than was ever made in the gold mines."⁹ Speculation became widespread and "Those who were farming rice in these early years seemed to feel that every acre of land put into rice would result in dollars in the bank, or at least in a new car."¹⁰ "Everyone in the country was straining every effort to get pumps for irrigation and to get water on the land because of the high price in 1919."¹¹

Obtaining a sufficient water supply was the major difficulty facing these rice farmers. A group of concerned landowners organized the Glenn-Colusa Irrigation District for the purpose of acquiring the system and completing the necessary construction to increase the canal capacity in time for the rice flooding season. William Durbrow explained the position of the landowners:

The Sacramento Valley West Side Canal Company had failed, and was not able or willing to enlarge the canal so as to carry the amount of water we wanted to divert from the river. So we decided the only thing to do was buy the system by forming an irrigation district.¹²

Despite initial opposition on the part of some landowners, the formation of the Glenn-Colusa Irrigation District was ratified by election on February 21, 1920. A lease for the canal system had already been obtained; the construction to increase the system's capacity was nearly completed; and the officers and landowners of the district were anticipating a successful year.

The rapid expansion of the rice industry necessitated the organization of drainage systems, as well as irrigation districts. The provision of drainage facilities was essential if damage to other lands was to be avoided when rice fields were drained. The Reclamation District 2047 was created as a result of the Hershey law suit. The landowners, known as the Hershey heirs, filed suit for the damage caused by drainage water from the rice checks into their lands, at the lower end of the district. The court ruled that the lands above would

FLYING FOR FARMERS

A chapter on "The Post War World" in Joseph McGowan's, *History of the Sacramento Valley*, covers the important developments made in the use of aviation for agricultural purposes beginning in 1919, when many pilots came home from the war anxious to use their skills.

The airplane was introduced to aid farmers in frightening ducks and geese off the rice fields by Edmond Moffett, a former World War I pilot. He charged fifty cents an acre to fly over and frighten away the fowl. Many farmers were willing to try anything if it would protect their crops, and hired him. Moffett became so successful that other operators were hired to help cover the Colusa area that season, but the business did not last for long. Eventually the ducks and geese became accustomed to the noise and were no longer frightened. The necessity for it declined when the price of rice dropped so sharply after 1920 and it was not profitable to attempt to keep the geese off the fields.

Other uses for the airplane were found by farmers throughout the decade. Photographing land from the air was found to be of help, when planning for irrigation systems, and began to be used to some extent. Seeding rice from the air was experimented with when it was necessary to reseed late in the season. The success of the experiment was twofold: a great deal more land could be seeded from the air each day, and flooded fields could be sown. Even crop dusting was experimented with prior to 1930, as farmers continued to find ways to use airplanes to their advantage. (Pages 248, 249)

have to do something, but withheld an injunction pending the organization of a Reclamation District.¹³

The majority of the rice lands on the west side of the Sacramento Valley were included in the Reclamation District 2047, which was developed concurrently with the Glenn-Colusa Irrigation District for the purpose of drainage. The district covered most of the rice area in the

Sacramento Valley, between Willows and Williams in Glenn and Colusa counties including portions of six other irrigation districts. An unusual feature of Reclamation District 2047 is its main drain, also known as the Colusa Basin Drain, which follows the natural Colusa through in the southerly direction, for 75 miles, all the way to the Sacramento River north of Knights Landing.¹⁴

Financing for a reclamation district was handled slightly differently than for an irrigation district. Land assessments were levied up-

on the theory of benefits and not in proportion to the value of the land. The only method of paying debts was to issue warrants; the assessment was then called for payment. Landowners in the Reclamation District 2047 apparently did not object to its formation and the addition of another assessment, in light of the legal suit against them. It seemed as if the irrigation and drainage problems of the area within the boundaries of the Glenn-Colusa Irrigation District were finally resolved.



One of the first rice fields in the Glenn-Colusa Irrigation District



Ruth Dredger used by District in 1925



Glenn-Colusa Irrigation District employees standing in front of Ruth Dredger. From left to right: Joseph Loretz, oiler; Andy Detlefsen, operator; R. Seymour Edwards, Superintendent; and Clyde Renwick, Watermaster.

Unfortunately, the winter of 1920 was extraordinarily dry, making it necessary to deliver irrigation water to the alfalfa and diversified crop farmers immediately. The Glenn-Colusa Irrigation District promptly supplied the landowners with the needed water, and continued with preparations to increase their river diversion to 1,300 cubic feet per second, despite the water shortage of 1920. The increased diversion of water for the irrigation of rice in 1919, combined with a few years of subnormal rainfall and runoff, resulted in virtual drought conditions. The 1920 water supply was estimated as being about sixty per cent of normal. "Never before in the history of the State was irrigation required by crops in February."¹⁵

Almost the entire flow of the Sacramento River was being utilized for irrigation that spring. One of the most alarming effects of the water shortage was the advance of salt water in the lower river and Delta sections. This was due partially to the lack of rainfall in 1919 and the increases in Sacramento River water diversions. The encroachment of salt-water, from Suisun Bay up the river to a point above Antioch, focused a great deal of attention upon the upstream diverters. When these lower Sacramento River users learned that the Glenn-Colusa Irrigation District planned to enlarge the capacity of the canal system, and increase their demands to at least 1,300 feet per second, they threatened legal action.

The members of the Glenn-Colusa Irrigation District's Board of Directors were not intimidated, even when suit was actually filed. They felt justified in diverting the full amount of 1,300 cubic feet per second for several reasons: the most important being that they had the oldest upstream water rights on the river, dating back to 1883; and the unique Congressional act of 1906 for the diversion of 900 cubic feet per second from the Sacramento River. The enlargement of the system for the 1920 season had been one of the guarantees of the Organization Committee while organizing the district. Many landowners had loaned large sums of money for construction, based upon the belief that they would be receiving all the water they might require. The Glenn-Colusa Irrigation District officials were determined to keep their promises to the voters

of the district, and delivered the water to the landowners throughout the irrigation season.

The attorney for the city of Antioch, D. B. Marks Green, brought action in the Superior Court of Contra Costa County. It was then transferred by writ to the Superior Court of Alameda County. The Glenn-Colusa Irrigation District officers continued to divert all the water they needed and refused to back down even when presented with injunctions and petitions. Newspaper headlines read: "Glenn-Colusa District Will Fight For Rights," "Danger Lurks in Combination of Millionaires and State Officials, Declares S. J. Hankins," and "Delta Farms Declare War on Rice Men."¹⁶

The Antioch contingent had managed to secure the support of state officials, as well as the financial backing of several wealthy Delta landowners. The trial proceedings continued for several weeks and dealt with questions regarding the most beneficial use of water. The suit was eventually decided in favor of Antioch. The decision was based upon riparian doctrine; granting the Delta rights to the flow of the Sacramento River on the theory that it had earlier rights than the up-river appropriations. "This judgement resulted in appeal and the appeal went to the Supreme Court of the United States."¹⁷

Litigation continued on past the 1920 irrigation season. The Antioch forces tried to enforce an injunction to prevent the planting of rice crops in 1921, but it was not upheld. Local newspapers covered the testimony and courtroom developments on a regular basis. Meanwhile, the District continued to use the full amount of water it was entitled to throughout the legal proceedings. The final decision was determined as adverse in part to the Delta, for attempting to remedy the situation with an injunction, with no real grounds. The decision for the Glenn-Colusa Irrigation District (and other upriver "diversioners") was the recommendation to actively seek alternative sources of water supply to meet all the interests involved.¹⁸

An organization of upriver "diversioners" was quickly formed to pursue an investigation for additional water supplies. Fred H. Tibbetts was selected for the purpose of conducting the search and providing reports on his findings. Tibbetts and his crew prepared extensive

reports on a few of the proposals. The possibilities of constructing a gravity diversion dam at the upper end of the Sacramento River flood plain, for the irrigation of approximately 440,000 acres, were explored in the, "Report on Gravity Diversion." Another report dealt with the plan to augment the low water supply by constructing a dam to store the waters of the Fall and Pit rivers. The water was to be released down the Pit River to the Sacramento for diversion, and then down into the Delta. This was designed to insure enough water for the irrigation of 800,000 to 1,000,000 acres.¹⁹

Although the costs of such grandiose projects seem prohibitive today, things were more reasonable in 1920-21. In fact, the group of "diversioners" seriously considered becoming an official entity and financing the project, which was estimated at over six million dollars.²⁰ Unfortunately, circumstances put an end to any ideas of financing a project of this magnitude, and there wasn't much of a demand for water that year.

The weather played a major role in the events of 1920. After the drought of the spring and summer, everyone was looking forward to a successful rice harvest. The District had been able to meet the demands for water; the landowners had conquered a new variety of "water grass" in the rice; and the rice was shocked and curing in the fields. Then on October 6, 1920, there was a rainstorm. The rice harvesting equipment could not be used successfully in wet or muddy fields, and each time the rain stopped and the ground started to dry, it would start raining again. Charles Lambert told of winter floods carrying sheaves of rice through drainage ditches and out through the Golden Gate. The rains didn't stop until the middle of April that year and only a small amount of the early rice was harvested.²¹

The physical destruction of the rice crop was not the only problem facing the District and landowners. The rice market also crashed in 1920, plunging the entire area into an agricultural depression. Speculation on rice resulted in catastrophe for many, and a number of banks were forced to close. Some landowners had difficulties in meeting their assessments, especially those with poorer lands.

Many had such depleted incomes that it was impossible to pay their assessments that year.

The loss of assessment and water tolls made it impossible for the Glenn-Colusa Irrigation District to meet its first bonded debt installment. William Durbrow arranged to have the District refinanced by reallocating the payments. The bonds were certified to be paid off at five per cent of the principal of the debt for the first twenty years. He was able to get people who owned bonds to accept other dates for payment of the principal. This meant equal payments for each year, but did not change the principal or interest.²²

CALIFORNIA GIBSON WINS



California Gibson, first woman to serve on the Glenn-Colusa Irrigation District Board of Directors (Courtesy of Sam and Dophelia Gibson)

The only woman to serve on the Glenn-Colusa Irrigation District Board of Directors, to date, was California Gibson. She was elected in 1922 after a tremendous amount of local controversy. The County Rice Growers Associations and the women of the area promoted her candidacy, saying, "Appoint the one best fitted—man or woman." Because of the uniqueness of California's position as a large rancher and Board member, she received a great deal of attention in the press that year. Articles appeared in the local papers; a monthly

magazine called *Service*; the *San Francisco Examiner*; and the *Sacramento Bee*.

One of the most informative stories on her election, position and background, was written by R.E. Hodges. "Woman Director of 100,000 Acre District," appeared in the March 4, 1922, edition of the *Pacific Rural Press*, and best describes the remarkable "Miss California," as she was called.

Miss California Gibson is fittingly named; for her opportunity is largely the result of her birth in this free untrammled unconventional state. She is fittingly named also, because she believes in development of opportunity for all who will work with industry and intelligence. It is because of this belief that Miss Gibson was appointed one of the three directors of the Glenn-Colusa Irrigation District January 28, 1922. Politicians said that although she had the desirable qualifications for director to succeed her recently deceased brother, it would never do to appoint a woman to such a responsible position. But the real California spirit of giving everyone opportunity and responsibility in proportion to character and ability prevailed.

It fell to the county supervisors of Glenn county to say the final word in this appointment. Colusa county people and county supervisors backed Miss Gibson for the position. Women of Glenn county took up the campaign with enthusiasm. They held a mass meeting on January 26 and organized an automobile parade to visit the supervisors and impress the latter with the unanimity of their convictions in favor of their candidate. She now carries a third share in the responsibility for the welfare on 100,000 acres and townspeople of half a dozen cities and towns depending on the farming industry of that territory.

. . . She stands for maximum use of all the water rights to which the district is entitled, and for adequate drainage to prevent injury to the land and crops by rising water table and concentration of alkali near the surface. She has the business head to see what a calamity would result to the opportunities for development in that part of California if any other than these broad principles were to prevail.

Her business head had not come by chance. Her father, J.S. Gibson, bought his first acres from the Government in 1854 and developed a stock ranch known far and wide for its prosperity and hospitality. Miss Gibson and her brother lived out of doors. They were their fathers pals and they learned farming from the ground up. As the country developed, the Gibson ranch kept ahead of the times in improved farming practices. The father died in

1906 and the two youngsters took active management. They developed one of the best known Holstein herds in the state, and made it famous for its "grandson of Till Alcartra." They make the proud claim to have the only herd that has developed two cows each producing over 30,000 pounds of milk containing 1,200 pounds of butter in a year.



Gion Gibson, one of first Glenn-Colusa Irrigation District Directors

Miss Gibson was given a proper education, "finished" at Miss Head's private school in Berkeley. Her brother graduated from Stanford University engineering course. Both preferred the farm life; and their business ability has been shown in the exceptional development of more than 2,000 acres under irrigation. When Gion passed on last January, his sister California was thoroughly prepared and competent to handle the ranch. Her appointment to the Irrigation District Board of Directors means no worry to Miss Gibson herself. "In a way, it is nothing new to me," she says. "I know what it is to live at the end of the ditch. The problems of the district have been my problems for years."

California Gibson was reelected to the Board of Directors several times and continued in office until 1929, at which time she sold the ranch. In 1930 she began her service as Colusa County Treasurer and occupied the position for sixteen years, until 1946. Narcissus California Gibson (she insisted on California), was born March 6, 1880, and lived until March 21, 1958. She spent the first part of her adult life managing a ranch and working for the benefit of the Glenn-Colusa Irrigation District. She continued to serve the community as Colusa County Treasurer, spending over twenty-five years serving the communities of Glenn and Colusa counties.

The District tried to maintain and continue its service to the area throughout the 1920's. Some expansion also occurred when the Williams Irrigation District was annexed into the Glenn-Colusa Irrigation District; the district's total size was now up to 117,000 acres. The consolidation was expected to give a big impetus to dairies and orchards in both counties, and involved the extension of the main canal. The main canal terminus had remained the same since the Sacramento Valley Irrigation Company completed work in 1910. The annexation of the Williams Irrigation District necessitated the extension of the canal by an additional twelve miles, for which \$130,000 was budgeted.²³

The election for the consolidation was held on June 18, 1924. Five board members were also elected that day; two additional directors were elected to represent the additional area.²⁴ Besides increasing the service area of the district, the inclusion of the Williams Irrigation District meant a decrease in the bonded indebtedness of Glenn-Colusa. The Williams Irrigation District had its own bond issue, which was in very bad shape. This did not really affect the Glenn-Colusa Irrigation District; however, the Williams Irrigation District was required to take care of their own bond issue.²⁵

Controversies within the district organization became more prevalent as the years went by. Rice conditions and prices remained low for ten years. Production was not resumed at the same level as before the crash; farmers were now more involved in the pasture of livestock, sheep and cattle. Some of the smaller landowners resented the board's interest in the cultivation of rice, even going so far as to accuse them of favoritism to rice farmers. At one point, a petition for the recall of the board was submitted to Charles Lambert, the executive secretary of the District.

Lambert did not try to appease them; he simply ignored their petition. The recall committee then hired an attorney and took the matter to the Appellate Court in Sacramento. The Glenn-Colusa Irrigation District's counsel won the case easily by pointing out the legal flaws in the petition, much to Lambert's satisfaction.²⁶ Lambert left the District in 1924, shortly after his victory over the

recall petition. He had seen the district through the organization proceedings, construction, and the aftermath of the rice crash. The challenge was no longer there for him and he was anxious to undertake some land development work of his own.²⁷

Durbrow had his own problems with a group of general crop landowners, after Lambert had left. This group had acquired some power as time went by because the district election rules provided for only actual residents of the district to have a vote. The large rice farmers and people who owned the majority of the land in the district did not always live on it, and were not qualified to vote on district matters. Therefore, even though the general crop farmers didn't control the largest amount of acreage, they were able to gain control of the district towards the end of the decade.

A recall election was held to replace the board of directors. Durbrow was employed as Manager at this time and was not very pleased with the new board of directors. Apparently the feeling was mutual; Durbrow eventually became disillusioned with their

WILLIAM DURBROW



*William Durbrow, first President of the Glenn-Colusa Irrigation District
(Courtesy of Robert Durbrow)*

William Durbrow was active in irrigation district affairs from 1919, until his retirement in 1947. He became known throughout the state for his background in irrigation matters and was widely recognized for his organizational, administrative, and engineering talents.

Durbrow was born in San Francisco in 1876, and originally trained as a mining engineer. His first job in the field was as the engineer and manager of a water and power company in Oroville. He and his family came to the area in 1915 to try ranching southwest of Willows, on land that his wife had inherited. William Durbrow was soon involved in local agricultural affairs; he served as the Glenn County food administrator during World War I and was also a director of the Rice Growers Association.

The war had created a demand for rice, which increased the prices farmers received for it, and led to rice being planted in larger quantities than ever before. Obtaining enough water to irrigate the rice crop became one of the major priorities for farmers in the area; the Sacramento Valley West Side Canal Company was in receivership and could not meet the demands for water. Durbrow's earlier experiences in the distribution of water led to his involvement in the matter.

He was a member of the three man executive committee, who negotiated a one year lease for the Glenn-Colusa Irrigation District in 1919, to provide for the immediate expansion of the system. When the District was successfully organized in 1920, Durbrow was elected as President of the first Board of Directors and was subsequently elected to a second term as President. When the first Engineer/Manager of the Glenn-Colusa Irrigation District left, Durbrow resigned as President of the Board of Directors and assumed the position of Manager. After devoting years of interest to the Glenn-Colusa Irrigation District, he left in 1927, upon accepting the position of Manager of the Nevada Irrigation District.

William Durbrow remained active in irrigation district matters throughout his long career. He also served as a trustee of the Reclamation District 2047 and was President of the statewide Irrigation District Association (now the Association of California Water Agencies), for a ten year period. His son, Robert Durbrow, followed in his footsteps and just recently retired as Executive Secretary of the Association of California Water Agencies.

maneuverings to replace him and accepted a position with the Nevada Irrigation District.

The District had faced up to many challenges during its first ten years in existence. It had survived the Antioch law suit; the speculation crash of 1920 and subsequent refinancing; and changes in management. These had not been easy years for the Glenn-Colusa Irrigation District, and the 1930's were going to prove to be even more of a struggle.



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27. *Ibid.*, p. 119.

The Great Depression

Prosperity had not returned to most of the farmers and landowners of Glenn and Colusa counties during the 1920's. The entire agricultural community had suffered as a result of the 1920 rice crash, which actually caused the downfall of many speculators. The market for rice had not improved and all other crop prices remained low. Out of necessity, many of the landowners turned to raising pasture and cattle as a means of economic survival. Throughout the decade, landowners and farmers persisted in their endeavors in the hopes that economic conditions would improve.

Unfortunately, the situation did not improve. The agricultural depression of the 1920's had been but a forerunner of the Great Depression, experienced by the whole nation after the crash of 1929. Not only was the agricultural industry suffering a depression; banks, labor and business began showing signs of the "sick economy."¹

Prices for crops continued to drop in the early 1930's, making it even more difficult for farmers. In 1929, rice sold for \$2.25 per hundred pounds, and by 1931 the price had dropped to eighty-nine cents."² The general crop farmers were somewhat more fortunate; they had the advantage of being able to switch to crops that gave the greatest profit, although there really were not very many profitable crops grown during this period. Orchardists found that their returns were sometimes less than their harvest costs. The large investments and long term involvement in establishing the orchards, left them with little recourse but to continue on if at all possible. "In spite of

various attempts to arrest the decline in prices, California farm income dropped thirty-nine per cent between 1929 and June 1932."³

These conditions had a major impact on the plight of the Glenn-Colusa Irrigation District. The district continued to distribute water, but the demand for water had decreased, reducing revenue and contributing to its financial problems. Reductions in the amount of rice acreage planted, played a major role in reducing water demands. Since the market did not improve, farmers were not planting as much rice. Some of the alkali lands that were only conducive to growing rice, remained idle and did not use any water at all. Rice used almost twice as much water for irrigation as general crops, so when land was not irrigated at all, the reduction in water use was sizable.

The landowners found it increasingly difficult to meet their own living expenses, pay the debts of the Glenn-Colusa Irrigation District, Reclamation District 2047, and county taxes. Under the irrigation district law, assessments were levied against the land to meet the district's obligations of interest and bond principal. If a landowner would not, or could not, pay the district assessments, the district took title to that land. It was then removed from the assessment roll and the district debt was reapportioned among the remaining land. Hypothetically speaking, this meant that if the district owed \$10 million and there was only one acre of land left in the district, that \$10 million would fall due upon the one acre. This created an impossible situation for both the district and the land-



Glenn-Colusa Irrigation District offices on 405 E. Sycamore Street, Willows



Downstream (discharge) side of main pumping plant in early 1930's

owners.⁴

The burden of payment kept going up, forcing people to give up their land. It was often easier for the smaller landowners to hold onto their lands than it was for the large landholders. The small farmer was likely to have fewer debts, and could survive by living on the land and raising enough crops for sustenance. The big investors had larger debts to pay, as a rule, which included large mortgage payments and more assessments, because they owned larger amounts of land.

Many of the landholders turned their title over to a security holder of some sort, who carried on the assessment payments until it became obvious that conditions were not changing. The security holders, which included banks, trusts, and insurance companies, turned the titles over to the districts and sustained tremendous losses as a result of speculating on the prevailing conditions. Once the district took possession of the land, it was freed of any debts but the outstanding bonds of the district.⁵

Ironically, many of the former landowners became tenants of their own farms. The Glenn-Colusa Irrigation District's Board of Directors arranged lease-rental agreements for the lands, and got what money they could for the use of the land. The landowner was better off renting because the interest charges on the debt load kept increasing. More and more of the land was coming into the District's possession during the early 1930's, until eventually the bulk of the land in the District was off the assessment rolls and under the control of the Board of Directors.

The Reclamation District 2047 was in a similar predicament. The assessments for the reclamation district were not levied in proportion to the value, as the irrigation districts were, but were based upon the theory of benefits. Assessments could run from \$15 per acre to \$60 an acre, depending upon the benefits derived from the drainage work.⁶

The Reclamation District also differed, in that failure to pay assessments for one year resulted in foreclosure of the land. Irrigation districts did not take possession until delinquency occurred for three consecutive years,

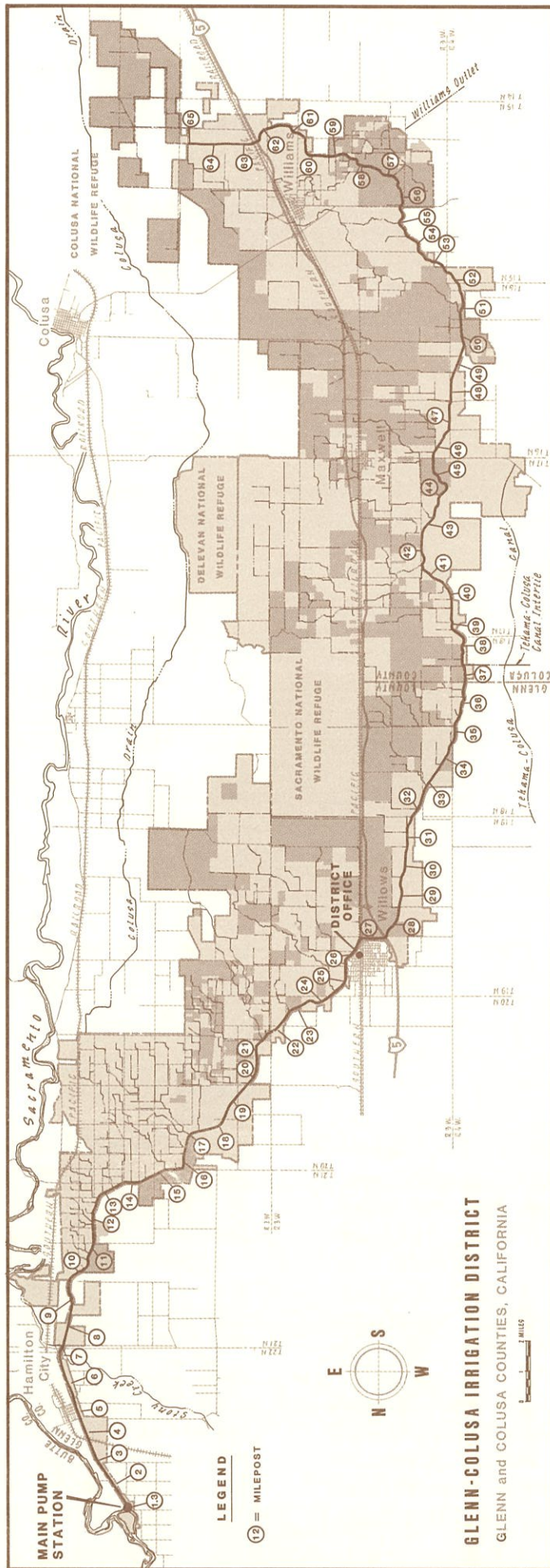
and county taxes had to be delinquent for five years before ownership was conveyed to the State Controller on behalf of the county.

The reclamation assessments were only for interest and did not include principal, making them smaller payments than the irrigation district's. The landholders tried to hold onto their lands for as long as possible. Some of them didn't bother with county taxes, but would pay the reclamation district's assessments on the third year, when the irrigation district took possession of the land for non-payment of assessments.⁷ In this way the landowner had held onto the land for two years at the cost of his reclamation assessments. However, the debts for the overall area were pyramiding at such an alarming rate that some type of action was necessary.

The urgency of the situation became apparent when it was realized that the district would be completely bankrupt if any more bonds matured. The Glenn-Colusa Irrigation District was not completely bankrupt at this point, because some landowners had continued to pay the assessments. However, the district did have title to over 50,000 acres, in conjunction with the reclamation district and the state. This meant that there were three underlying liens of equal importance on the land, and made selling it almost impossible.

In 1935, Charles Lambert was persuaded to turn his attention to the financial salvation of the district. Although he was employed by the State Board of Equalization at that time, he had an understanding about accepting irrigation district work and was able to take on the project. In order to avoid any legal complications the contract for refinancing the Glenn-Colusa Irrigation District was with George R. Freeman, his attorney.

The agreement was made on a contingent fee basis, which meant that Lambert would not receive payment for the work and expenses done on the refinancing unless it was successful. All he requested was the cooperation of the district attorneys and the Board of Directors. The Board of Directors had been held over because there were not enough landowners left in the district to hold an election, so they were responsible for representing both the landowners and the bondholders in this situation. It was a risky venture, particularly



Shaded areas of map depict lands decedded to the District during the Depression, for lack of the owners ability to pay assessments.

CHARLES FRANKLIN LAMBERT

Charles Lambert's career was a diverse and interesting one which centered around the lands and irrigation of the Sacramento Valley. Willa Baum described him as being, "Full of humor, frank, partisan, he appeared to be a man who could be an enthusiastic friend or an outspoken enemy." She described his activities best in the introduction to her 1957 interview, *Charles F. Lambert on Sacramento Valley Irrigation and Land*, a University of California Regional Cultural History Project:

The career of Charles F. Lambert is the story of irrigation and water development in the Sacramento Valley and of the organization and operation of public districts to cope with the problems of water distribution, drainage, flood control, and more recently the purchase of water and power from the United States Bureau of Reclamation. But more than that, his story, while unique in its details, is representative of the lusty optimism of the late 19th and early 20th century pioneers -- speculators, financiers, promoters -- independent men who pushed westward in search of new fields of endeavor. In Mr. Lambert's story can be found the essence of the romance that is California.

Half a century ago, in 1907, Chas. F. Lambert, young practical engineer, arrived in Willows, a small town in the upper Sacramento Valley, to look over some lands his father was promoting. He and his father were soon caught up in the whirl of irrigation and land development schemes that preceded World War I. After the War, with the phenomenal demand for rice, and therefore for water, Mr. Lambert began organizing and managing irrigation districts. When that became dull (and the rice bubble burst) he turned to land speculation and other types of promotional work. As the agricultural depression which had begun in 1921 deepened, landowners began to lose their lands to public districts they had created, and those districts sank further and further into default, Mr. Lambert turned his attention to the financial salvation of the districts. Here he battled through the problems of settling conflicting titles on delinquent lands, reducing bond interest and principal, getting in bonds from obstinate bondholders, obtaining money from the Reconstruction Finance Corporation, reselling land to its former owners, and rehabilitating misused lands. World War II and the return of farm prosperity put Mr. Lambert back in business, this time selling lands he had acquired in lieu of fees for his work during the depression. And always he

has been and is in close touch with the problems of the public districts in the Sacramento Valley.

Edwin F. Davis, editor of the Willows Daily Journal, wrote a tribute to Charles Lambert after his death in 1959, which appeared in the February 1960 issue of *Wagon Wheels*. His description of Lambert's accomplishments in his refinancing endeavors give scope to the extent of his work:

The districts he successfully refinanced, from 1936 through 1941, include the Glenn-Colusa, Jacinto, Provident, and Compton-Delevan in Glenn and Colusa Counties, the Citizens Land and Water Company in San Bernardino, and the Cochran Irrigation District in Visalia. He also reorganized the Sutter-Butte Canal Company's system in Butte County, and took an active part in the successful operation of the Lake County Mutual Water Company, of which he was a director. (page 4 . . . During the period he organized districts, Mr. Lambert often took land in place of fees. By 1942, when he was stricken with thrombosis and began to liquidate his vast holdings, he controlled 16,000 acres of irrigated land. Some of it he had acquired for as low as \$10 an acre and sold for as high as \$225 an acre. (page 7) . . . In the final years of his life, Mr. Lambert concentrated on what he justifiably termed "pro bono publico" (for the good of the public) activities, without fee. He explained that he didn't need the money and could act with complete independence if he accepted no pay. Primarily, he acted as consultant for various irrigation districts along the Sacramento River and, in 1956, spearheaded formation of the Upper Sacramento Valley Water Users Association, with Fred J. Johnson of Willows, as president (page 7)

The contributions Charles Lambert made to the growth, development, and preservation of the Sacramento Valley are nearly unparalleled. He not only contributed to water issues, but was a founder of the Colusa County Historical Society. Ed Davis realistically summed up his contributions, in saying, "unlike many of the 'barons' whose imprints are embedded in California, he possessed not only intelligence and shrewdness but also idealism. He left California with far more in public benefits than he took in private gain." (page 8)



Charles Lambert, 1887—1959 (Courtesy of Wagon Wheels, published by Colusi County Historical Society)

as refinancing was a whole new field, but Lambert had always like a challenge.

The plan was to refinance under the Reconstruction Finance Corporation which came under the Municipal Bankruptcy Act. A section on Drainage and Irrigation had been added, with the assistance of the Irrigation Districts Association. William Durbrow, now of the Nevada Irrigation District, took an active part in this aspect of refinancing.⁸

The Reconstruction Finance Corporation was authorized to refinance irrigation and drainage districts. According to William Durbrow:

The Reconstruction Finance Corporation made money. They bought the bonds at a depreciated price. Then, after the district got in better shape, they resold the issue to a bond house at a lower price than when originally issued and the district was able to meet the lowered cost.⁹

Lambert applied to the Reconstruction Finance Corporation for a loan sufficient to pay sixty-five cents on the dollar of the outstanding bonds. He proposed to recover nearly sixty-seven per cent of the outstanding bonds on a settlement basis. The Reconstruction Finance Corporation sent a team of appraisers to review the District's history and financial records, before making final approval on the loan. After careful consideration "the application was approved and contracted to grant a loan sufficient to pay 65 cents on the dollar of par."¹⁰

The next problem was to get the bonds deposited by the final date of May 31, 1934.¹¹ The district had tried to refinance the year before by employing a bond salesman to obtain enough district bonds for the purpose. They were scattered throughout the state and he was unable to obtain enough to succeed. Lambert immediately began a newspaper and advertisement campaign to secure bonds for this purpose and they acquired a substantial number in this manner.

A stumbling block was encountered when the owner of a large block of bonds, enough to complete the required amount, was not willing to give up his bonds for the price of sixty-five cents on the dollar. I. G.

Zumwalt, of Colusa, was a well known businessman and financier. He owned a successful equipment company and had also been a trustee of Reclamation District 2047, which enable him to contact most farmers in the District. He had accepted reclamation bonds and warrants for as low as twenty cents on the dollar when farmers were unable to pay for their tractors, as times got tougher. In this manner he acquired large blocks of land that could not be sold because of the liens it was subject to. He protected his ownership of these lands by purchasing Glenn-Colusa Irrigation District bonds whenever possible. The bonds were desperately needed in 1935 to complete the refinancing of the district.¹²

It seemed as if Zumwalt would be willing to cooperate with the district in the matter, as sixty-five cents on the dollar was more reasonable than most deals of this sort. An article in the *Williams Farmer* on May 17, reported that Zumwalt had signed a petition in May of 1934, which stated that sixty cents on the dollar was too much, and that thirty-five cents would be sufficient.¹³ By May of 1935, Zumwalt had conveniently forgotten about the petition and the statement he had made at a public meeting that he would accept sixty-five cents on the dollar; he was holding out for seventy-four cents on the dollar.¹⁴ The deadline was rapidly approaching and local landowners stood to lose their farms and livelihoods, if Zumwalt would not release the bonds he controlled.¹⁵

Zumwalt did not release the bonds in time to meet the first deadline. An extension was granted, and measures to encourage Zumwalt to submit his bonds were pursued. Petitions were signed; public meetings were held; and finally a public demonstration was held. The San Francisco Examiner carried pictures and the following story:

In a mile and a half long caravan, five hundred farmers, farm wives and farm children, drove slowly into town from Glenn and Colusa counties, blocked off the street in front of Zumwalt's store and offices, and arrayed themselves in their strange demonstration.¹⁶

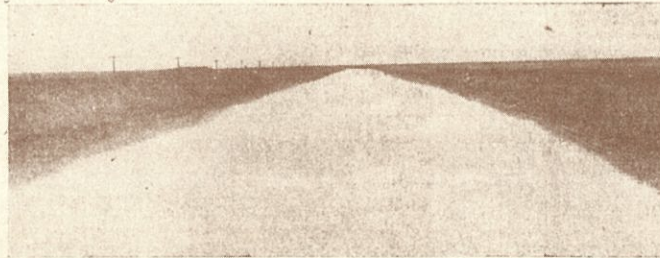
Zumwalt had apparently heard of the demonstration and had his chauffeur drive him to San Francisco. The demonstrators were

Glenn-Colusa Irrigation District

SUPPLIES

ABUNDANCE OF WATER

For Every Irrigation Purpose



Practically An Unlimited Supply Of Water At Amazingly Low Cost

The Glenn-Colusa Irrigation District serves the farmers of Glenn and Colusa counties in every manner of irrigation at one of the country's lowest per acre rates.

With the Sacramento River as it's source of supply, farmers of the Glenn-Colusa Irrigation District never have to fear a water shortage.



Sacramento River Source of Abundant Supply



Well Filled Canals Carry Water Throughout District

An Unusual Opportunity For Home Seekers

Sales Direct From Owner to Purchaser Regulated As To Soil Type By U. S. Government Soil Survey

The late agricultural depression discouraged many underfinanced landowners to the point where they abandoned valuable farm lands to Governmental Agencies whose duties required collection of taxes to maintain government. In this manner the Glenn-Colusa Irrigation District became the owner of a considerable acreage which must not only be returned to private ownership but returned with a certainty of so remaining.

How best to market these lands with an assurance of future stability to both the purchaser and the community was a subject given careful consideration by its Board of Directors. Matters of serious concern to the Board were: how to avoid inviting high-pressure salesmanship; how to avoid inviting the speculator; how to avoid costly advertising campaigns—the total unregulated profits, costs and expense of each being far too often reflected in inflated land prices. In a word, to protect, as far as possible, the incoming land seeker and at the same time secure for the District the reasonable market value of the lands.

The plan finally adopted and in accordance with which these lands are now being offered for sale to the public, is:

- (1) To regulate the sales price of each tract sole-

ly with reference to the type of soil as determined by the U. S. Government soil survey, made many years ago, and truly remarkable in its accuracy;

- (2) To sell direct from the office of the District through the District's officials, thereby eliminating the objectionable features accompanying most land sale of burdening the future of the initial investment with agent's commissions, speculators' profits and money spent in costly advertising campaigns.

In this movement to insure the real investor in obtaining full value for his purchase, the District has been ably assisted through the co-operation of the Boards of Supervisors of both Glenn and Colusa Counties—each such governmental agency disregarding the amount of accumulated delinquencies and subjecting the sale of the title of the State to the same principles as those adopted by the Irrigation District; at least for once in the history of land sales, each purchaser is reasonably assured "of getting his money's worth".

The Secretary at the District's office in Willows, Glenn County, will gladly furnish all information as to acreage, location, and U. S. Government designation of soil type.

GLENN-COLUSA IRRIGATION DISTRICT

WILLOWS, CALIFORNIA

Glenn-Colusa Irrigation District Land Sales Advertisement, appeared in 60th Anniversary Edition of Willows Journal, 1937 (Courtesy of the Willows Journal)

THE SPALDING RANCH BECOMES
THE SACRAMENTO NATIONAL WILDLIFE REFUGE



Ducks on Sacramento National Wildlife Refuge

(Courtesy of Cecile B. Cramer)

The largest agricultural operation in Glenn and Colusa counties between 1920 and 1935 was the Spalding Ranch. The ranch had been used for the cultivation of rice and other crops, as well as for wildfowl hunting, over the course of the years. The effects of the Depression became evident when the company could not meet its water payments and assessments to the Reclamation District 2047 and the Glenn-Colusa Irrigation District, and title to the land went into the possession of the districts.

A beneficial solution for all parties was found when the federal government agreed to purchase the ranch and establish a national wildlife refuge area, to provide food and refuge for migrating waterfowl, as well as to help protect farmers from crop depredation.

The refuge was intended to provide a natural habitat for the birds, and some hunting was allowed once the crops were harvested.

The sale was of particular importance to the Glenn-Colusa Irrigation District as it was responsible for putting money back into the District coffers for the first time since the Depression had hit. The federal government paid approximately fifty cents an acre for several thousand acres of land, with the result that the Glenn-Colusa Irrigation District's Board of Directors were able to deposit a few thousand dollars in the District's account. In this manner all parties were satisfied and the Sacramento National Wildlife Refuge was established in the late 1930's.

Food for the World

An important transformation in the agricultural industry took place in the years following the Great Depression. The onset of World War II resulted in major changes in the Sacramento Valley's economy, which primarily revolved around agriculture. Farmers cultivated bumper crops when the war created a tremendous demand for food. The production levels of a variety of crops including: grains, rice, fruit, alfalfa, and dairy products, more than doubled between 1941 and 1945.¹

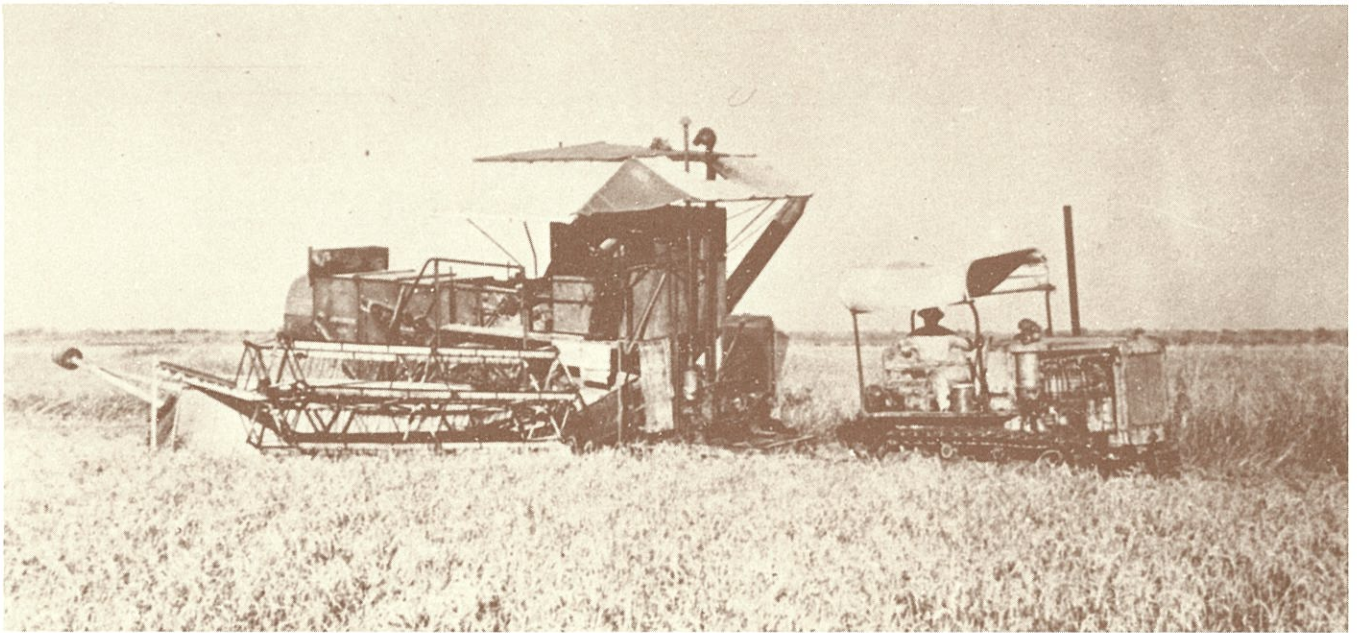
The cultivation of rice underwent major changes after production levels declined so radically after World War I, and crop patterns

shifted once again as a result of war times. Rice prices increased from "\$1.53 a hundred pounds in 1940 to \$3.75 in 1945 and to \$6.13 in 1947."² A great deal of progress was made in the development of rice harvesting equipment during this period. The introduction of the self-propelled combine harvester revolutionized the harvesting process. A central location for the harvester was no longer required, as the machine was able to combine several harvesting functions while traveling around the fields.³ The time and labor required to operate the combine harvester was greatly reduced and facilitated larger, faster harvests.



Windrow pickup pull-type harvester, about 1930

(Courtesy of Jack Willson & Rice Experiment Station, Biggs)

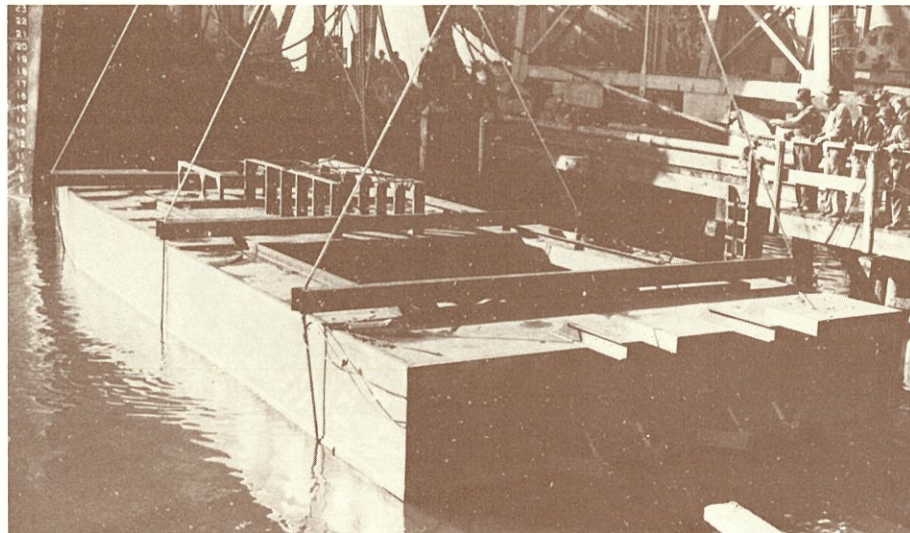


*Front view of pull-type, track layer combine harvester, about 1950
(Courtesy of Jack Willson & Rice Experiment Station, Biggs)*

Labor patterns were also shifting as a consequence of the war. Although farm labor wages had increased a great deal, the wages offered in war related industries were better, and influenced the population patterns of the Sacramento Valley. The counties of Glenn, Colusa and Tehama, were the only ones in the area that did not have some sort of large war contract. It was inevitable that the population would decline as migration to war related industries and enlistment in the armed services increased.⁴ Women and children stepped into many occupations formerly

occupied by men, and new machinery was invented to reduce labor and personnel. Despite labor shortages, the farmers produced record numbers of crops throughout these years.

The return of farm prosperity had a beneficial effect on the Glenn-Colusa Irrigation District, which had survived the depression that had born so heavily and for so great a length of time upon agriculture. The prosperous agricultural conditions meant income for the district, as water demands greatly increased to irrigate the expanding crop acreages.⁵



Steel hull constructed for Dredge "Delevan" in 1940's. Floated up the Sacramento River to pumping plant during the course of the summer

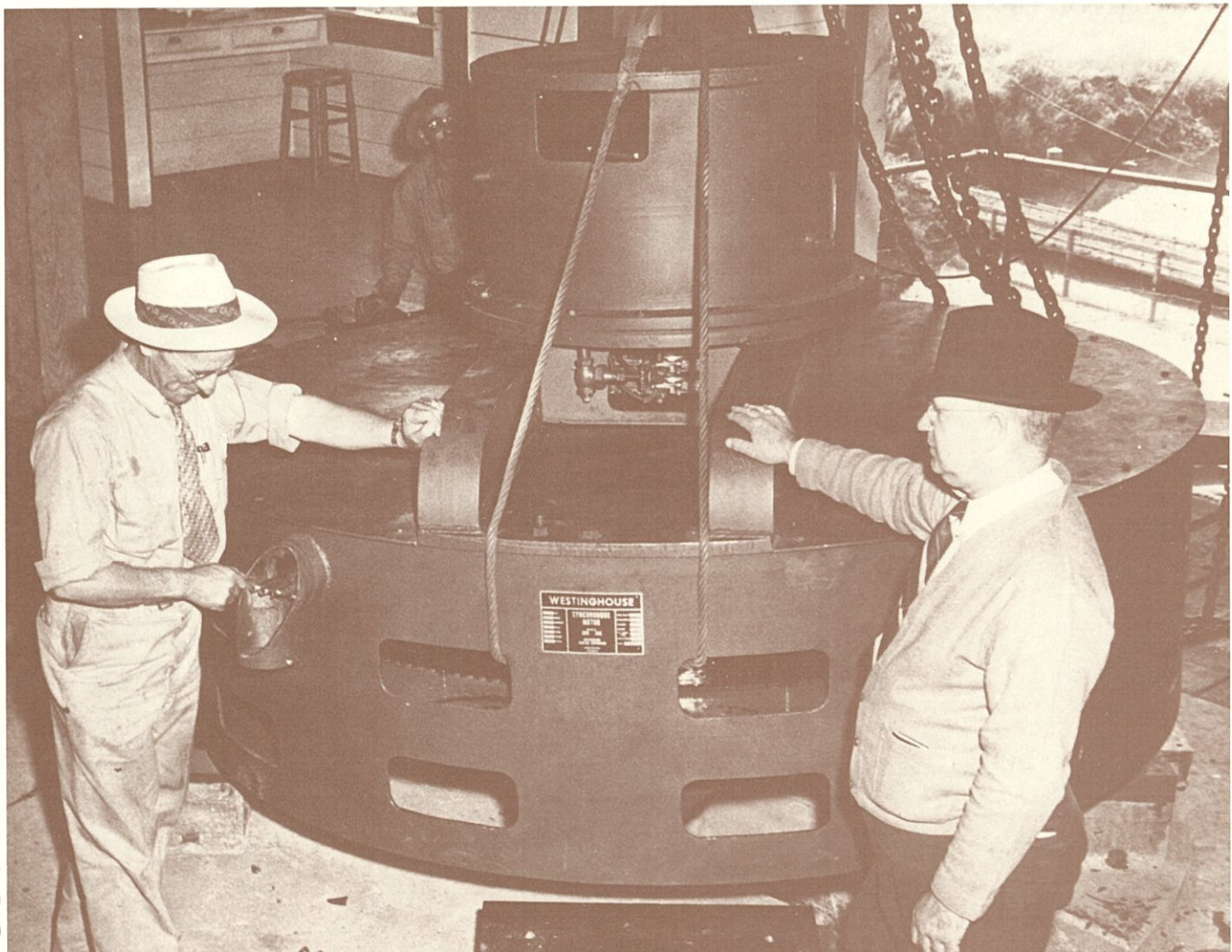
SUPPLYING THE NEEDS OF GLENN-COLUSA IRRIGATION DISTRICT

The nation's entry into World War II during the 1940's heightened the demand for food production. Rice, which was particularly well adapted to production in the Sacramento Valley, enjoyed an extremely favorable market which continued into the 1950's. Rice production was bolstered by Federal price supports and worldwide marketing in the Food for Peace program.

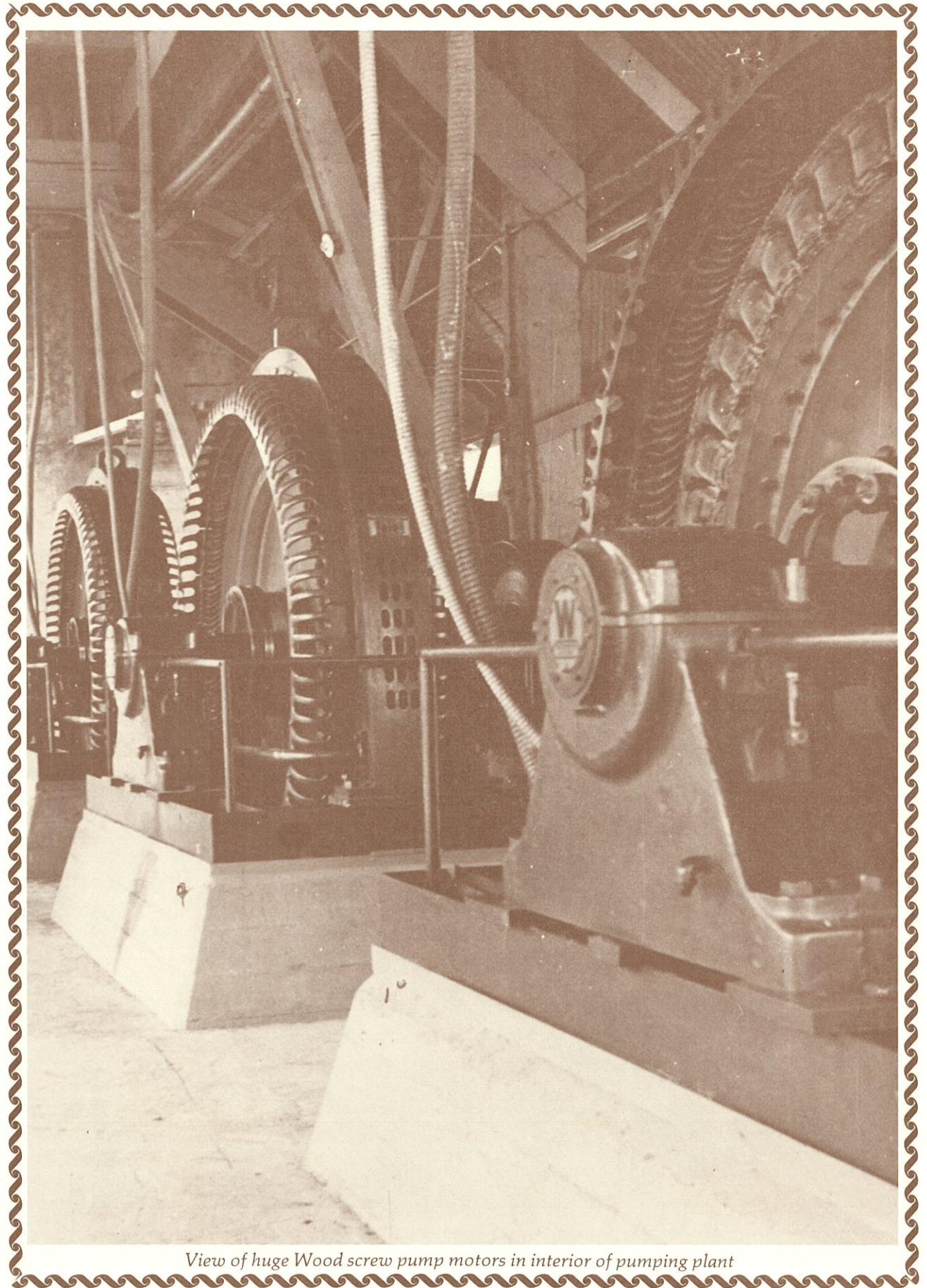
Howard Allard, secretary of the Glenn-Colusa Irrigation District from 1927 to 1956, played a key role in maintaining the stability of the District throughout the Depression and refinancing, and on into the period following the war, when the growth and demand of the

District were rapidly increasing. He is shown here examining the huge pump motors, weighing six and one half tons each, which had been recently installed.

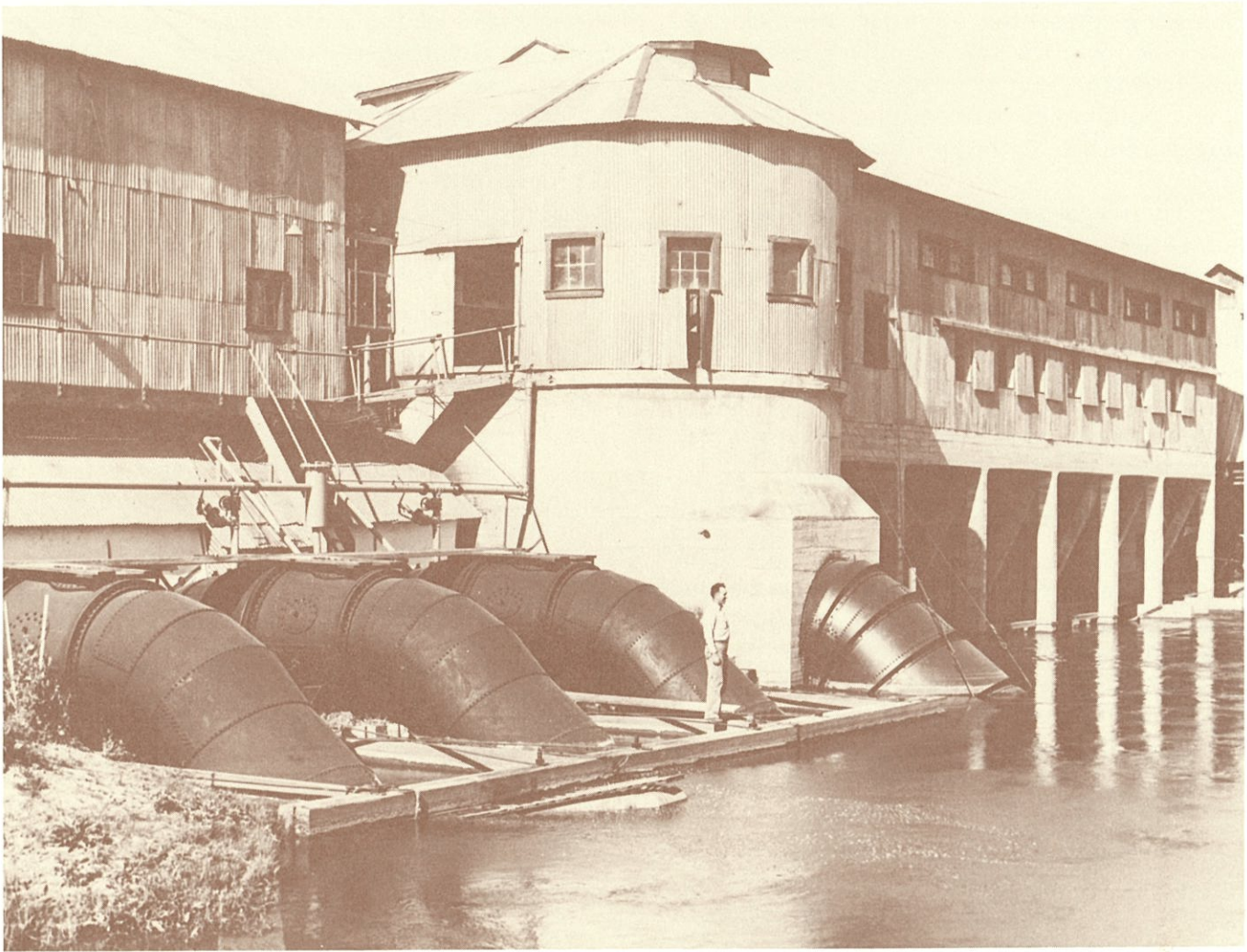
Each winter, three of the Wood screw pump motors were raised above the flood stage and then lowered back into place at the start of planting season. The pumps were used to increase delivery of water to 80,000 acres of rice growing land. Insuring the protection of the Glenn-Colusa Irrigation District's Sacramento River water rights, and meeting the growing irrigation needs of the District, were of the utmost concern during this period.



Howard Allard and unidentified mechanics, viewing pump motors installed in 1940's



View of huge Wood screw pump motors in interior of pumping plant



Exterior view of discharge side of pumping plant, late 1940's

The need for expansion became quickly evident and the District implemented several improvements on a "pay as you go" plan. These included the construction of a number of laterals that were used to distribute the water from the main canal, and the installation of several new pumps at the main pumping plant. The Glenn-Colusa Irrigation District was rapidly recovering from the trying times of the depression and working towards meeting the irrigation needs of district landowners.

A plan to supply all the irrigation needs of both the Sacramento and San Joaquin Valleys, with the direct involvement of the state government, had been proposed by Colonel Robert B. Marshall in 1920. The Marshall Plan, as it became known, basically proposed the:

construction of a storage reservoir on the Sacramento River above Redding which

would feed two parallel aqueducts running down both sides of the Sacramento and San Joaquin valleys to Dos Palos on the west and the San Joaquin River to the east.⁶

The plan was advertised throughout the state, by the California Irrigation Districts Association, in an effort to gain the support of the agricultural community. Any plan of this magnitude was sure to be controversial, and this one was no exception. The 160 acre limitation (or 320 acres for married couples) was a mandatory policy of the Bureau of Reclamation and caused great concern in agricultural circles. The system of riparian water rights that existed in California was another one of the major obstacles to any type of state wide plan. The passage of a constitutional amendment, in 1928, limited riparian rights to the same requirements as appropriative water rights: "the reasonable use of water."⁷

Financing presented another obstacle, as revenues from the sale of power were to be used to finance some of the costs. The private power companies banded together and campaigned to defeat the bill three times in the early 1920's.

The water project seemed the ideal solution to aid the recovery of the state's economy in the first years of the depression. After a great deal of controversy, the voters finally authorized the passage of a \$170 million bond issue to pay the initial costs of the project's development. "The act authorizing the Central Valley Project was sustained by a narrow state-wide majority December 19, 1933."⁸

There was no market for state bonds in the midst of the Depression and the state government was forced to abandon the plan. Fortunately, lawmakers had provided for this event by including a provision authorizing negotiations for federal construction and operation of the project in the act. Negotiations concluded in 1935 when President Franklin D. Roosevelt authorized emergency relief funds to implement the takeover of the project by the Bureau of Reclamation.⁹

The Central Valley Project was now in the hands of the federal government. Headquarters for the Bureau were established in Sacramento in 1935, and construction on the Contra Costa Canal was started in 1937. Delays occurred for several reasons and hindered construction of the massive project. These included the switch from the proposed construction of a San Joaquin River pumping system to the Delta-Mendota canal, and the enlargement of the Shasta Dam. Personnel shortages and material deficiencies, resulting from World War II, also contributed to delays. Although the first power sale from Shasta Dam had occurred in 1944, irrigation water was not delivered to the San Joaquin valley until 1951. The completion of fourteen years of construction on the Central Valley Project was marked by a celebration, held in August of 1951.¹⁰

The water rights of the Sacramento River came into question with the construction of the Central Valley Project by a federal entity. Negotiations between the appropriative diverters of the Sacramento River and the United States Bureau of Reclamation, for the

settlement of the water rights on the Sacramento River, were commenced in 1944 and continued for nearly twenty years. The Glenn-Colusa Irrigation District was to play an instrumental role in the culmination of the proceedings. The protection of the district's appropriative water rights, harking back to 1883, was of intense concern to the district throughout this period.



Footnotes

1. Joseph McGowan, *History of the Sacramento Valley*, (New York: Lewis Publishing Company, 1961, p. 320.
2. Ibid.
3. Jack H. Willson, Editor, *Rice in California*, (Richvale, California: Butte County Rice Growers Association, 1979), p. 174.
4. McGowan, p. 321.
5. "Glenn-Colusa Irrigation District Founded on Pioneer's Work," *Willows Journal*, September 30, 1937, 60th Anniversary Edition, Section C-3.
6. William L. Kahrl, Project Director and Editor, *The California Water Atlas*, State of California: 1978, 1979, p. 47.
7. Ibid, p. 47.
8. Ibid.
9. Ibid, p. 49.
10. Ibid, p. 49.

The Sacramento River Water Rights Settlement

The settlement of the Sacramento River water rights was of major importance to the future of the Glenn-Colusa Irrigation District, as it was the oldest and largest diverter on the river. In order to meet the growing demands for water, the District needed to take all necessary precautions to insure that the accumulated water rights of the district, dating back to 1883, were protected.

The State of California had filed appropriative water rights on Shasta Dam in 1937, which were assigned to the U.S. Bureau of Reclamation in 1938. Federal officials indicated that the United States would respect the individual and State water rights in various statements.

When the negotiation proceedings were initiated in 1944 it seemed as if an agreement could be reached that would satisfy all parties. "This was the first year water was stored behind Shasta Dam and during which supplemental stored releases were made during the irrigation season."¹ The water users of the Sacramento River conducted meetings for the purpose of appointing a negotiation committee to represent them during the proceedings. The negotiations quickly ground to a halt when it became obvious that the Bureau would not accept the position taken by the diverters; it withdrew its offer and suggested various methods of settlement instead.

The impasse on negotiations continued for several years because the only solution appeared to be monumental litigation, which neither group was willing to undertake. The situation continued until 1951, when Congressional hearings were held jointly with the

House Interior and Insular Affairs Committee and the Water Committees of the State Legislature. These became known as the Engle hearings as Clair Engle, Congressman and Chairman of the Special Subcommittee on Irrigation and Reclamation of the Committee on Interior and Insular Affairs, House of Representatives, had arranged for the joint hearing in an effort to clarify the water rights situation.² The most important aspect of the trial was the Bureau's demonstration claiming that the operation of the Shasta Dam that season had prevented the Sacramento River from going dry near Colusa, as the amount of diversions by river water users would have exceeded the natural flow.³

The impasse continued, but the trial had made the river diverters aware of the necessity of effective and accurate water distribution reports. In 1952, the Sacramento River and Delta Water Association started efforts to "apply various trial distributions of water among the water associations for the water users with historical rights."⁴ The Glenn-Colusa Irrigation District was a member of the organization and took part in the studies, until it became obvious that there was a conflict of interest between the District and the downstream water users.

The Glenn-Colusa Irrigation District withdrew from the Sacramento River and Delta Water Association in 1953, to join with the Upper Sacramento Valley Water Association. The Anderson-Cottonwood, Jacinto, Princeton-Codora-Glenn, Provident, Compton-Delevan and Maxwell Irrigation Districts were also members of the association, which



Rare photo of Charles Lambert at May 15, 1954, dedication of Will S. Green state historical marker, near Glenn-Colusa Irrigation District pumping plant at Hamilton City
(Courtesy of Wagon Wheels, published by Colusi County Historical Society)

hired an engineer and attorney for the purpose of conducting studies and negotiations. Several reports were assembled for negotiation purposes, but failed to produce any agreement with the Bureau. The association was dissolved in March of 1957, and the Glenn-Colusa Irrigation District determined that it would proceed on its own in future negotiations.⁵

The Glenn-Colusa Irrigation District was a participant in the 1956 Cooperative Studies which came about as an extension of the Trial Distribution Program. It was called the Cooperative Studies program because the Bureau, the State of California, and the water users, all cooperated to contribute the necessary data to assemble a study of this nature. It dealt with the entitlements and relative priorities of the water rights on the river, and the nego-

tiations proceedings were held up pending possible settlement.

The United States Bureau of Reclamation did not anticipate settlement based on these studies and went about the business of obtaining its water rights. The Sacramento River Water Rights Hearings were convened in September of 1959 and took a total of seventy-five days, before a final decision was adopted on February 9, 1961. The Bureau's applications for water were protested by virtually all of the Sacramento River water users, who were represented by the Sacramento River and Delta Water Association, or individually. The Glenn-Colusa Irrigation District represented itself as the largest diverter on the river, and maintained that it had the earliest prior rights to the Sacramento River and was entitled to develop to its fullest potential. This right

APPROPRIATIVE WATER RIGHTS FILINGS

TABLE 1. - Documents pertaining to water appropriations prior to December 19, 1914

Document	Posting date	Claimant	Location of diversion point	Diversion quantity	Place of use	Source of data
Approx. Mile						
SACRAMENTO RIVER						
Water Notice	12-18-1883	N. D. Rideout	154.8 R	500,000 inches measured under a 4-inch pressure	Plains of Colusa County	Recorded Dec. 21, 1883 in Book "A" of Misc. Records, page 81, Records of Colusa County.
Notice of Location of Water Right	11-30-1901	Byron D. Beckwith	154.8 R	150,000 inches measured under a 4-inch pressure	In the Counties of Glenn, Colusa, Yolo, and Solano	Recorded Dec. 7, 1901 in Book 1 of Misc. Records, page 626, records of Glenn County.
Notice of Location of Water Right	11-30-1901	Byron D. Beckwith	154.8 R	150,000 inches measured under a 4-inch pressure	In the Counties of Glenn, Colusa, Yolo, and Solano	Recorded Dec. 7, 1901 in Book 1 of Misc. Records, page 632, records of Glenn County.
Notice of Location of Water Right	11-30-1901	Byron D. Beckwith	154.8 R	150,000 inches measured under a 4-inch	In the Counties of Glenn, Colusa, Yolo, and Solano	Recorded Dec. 7, 1901 in Book 1 of Misc. Records, page 632, records of Glenn County.
Notice of Water Location	2-25-1903	Willard M. Sheldon	154.8 R	5,000 c.f.s.	In the Counties of Glenn, Colusa, Yolo, and Solano	Recorded Feb. 26, 1903 in Book 2 of Misc. Records, page 53, records of Glenn County.
Notice of Water Location	2-25-1903	Willard M. Sheldon	154.8 R	5,000 c.f.s.	In the Counties of Glenn, Colusa, Yolo, and Solano	Recorded Feb. 26, 1903 in Book 2 of Misc. Records, page 57, records of Glenn County
Notice of Water Location	11-13-1903	Central Canal and Irrigation	154.8 R	5,000 c.f.s.	In the Counties of Glenn, Colusa	Recorded Nov. 19, 1903 in Book 2 of Misc. Records
Notice of Water Location	4-26-1905	Central Irrigation District	154.8 R	5,000 c.f.s.	Central Irrigation District	Recorded May 5, 1905 in Book 2 of Misc. Records, page 124, records of Glenn County
An Act for the diversion of water from the Sacramento River, in the State of California, for irrigation purposes	5-9-1906	Central Canal and Irrigation Company	Between 152 and 167	900 c.f.s. (a)	Lands of the Sacramento Valley on the west side of the Sacramento River	Congressional Record 1906, H. R. 11796, Public Law No. 151
Notice of Water Location	11-5-1909	Sacramento Valley Irrigation Company	154.8 R	5,000 c.f.s.	In the Counties of Glenn, Colusa, and Yolo	Recorded Nov. 6, 1909 in Book 2 of Misc. Records, page 388, records of Glenn County.

APPROPRIATIVE WATER RIGHTS FILINGS

Document	Posting date	Claimant	Location of diversion point	Diversion quantity	Place of use	Source of data
STONY CREEK						
Notice of Water Location	4-15-1903	M. N. Sheldon	Where Central Canal intersects Creek	5,000 c.f.s.	In the Counties of Glenn, Colusa, Yolo, and Solano	Recorded April 16, 1903 in Book 2 of Misc. Records, page 66, records of Glenn County.
Notice of Appropriation	11-21-1904	Central Canal and Irrigation Company	Where Central Canal intersects Creek	5,000 c.f.s.	In the Counties of Glenn, Colusa, and Yolo	Recorded Nove. 25, 1904 in Book 2 of Misc. Records, page 105, records of Glenn County.
Notice of Water Location	4-26-1905	Central Irrigation District	Where Central Canal intersects Creek	5,000 c.f.s.	Central Irrigation District	Recorded May 5, 1905 in Book 2 of Misc. Records, page 124, records of Glenn County.
WILLOW CREEK						
Notice of Appropriation of Water	8-1-1907	Dr. T. T. Purkett	Location No. 4 Plate 4	2,000 inches measured under a 4-inch pressure	43 acres in N1/2 Section 11, Township 19 North, Range 3 West	Recorded Aug. 1, 1907 in Book 2 of Misc. Records, page 236, records of Glenn County.

(a) Right granted to divert at all seasons of the year, while and so long as such diversion shall not seriously injure the navigation of said river, an amount of water which, at a stage of said river of two feet above low water, as determined by the United States engineer in charge of the improvement of said river, or at any lower stage, shall not exceed 900 c.f.s.



*Glenn-Colusa Irrigation District Board of Directors meeting over lunch, March 17, 1949. Seated from left to right: Fred Johnson, Howard Allard, Mary Lou Marengo, Mario Marengo, Ben Johnson, Chet Detlefsen, George Bartholomew, and Wright Callendar.
(Courtesy of Ben Johnson)*

was not being recognized by the Federal government.⁷

The Glenn-Colusa Irrigation District was represented at the hearings by: "P. J. "Jack" Minasian, District Attorney; Paul M. Dwinell, District Manager; and Joseph E. Patten, Water Resources Engineer for the Clair Hill & Associates Firm."⁸ The District representatives attended nearly one-third of the trial and monitored the rest by transcript. The outcome of the proceeding was the State Water Rights Decision D-990, granting the operation of the initial features of the Central Valley Project, by the United States.⁹

The February 9, 1961, decision recognized the United States rights to the Sacramento River under California State Law. The present users were given until March 1, 1964, to complete contract negotiations with the Bureau of Reclamation for supplemental water supplies. The Glenn-Colusa Irrigation District was first to respond to this decision by offering to pay the Bureau two dollars an acre-foot for water during the 1962 season. This offer, and a similar one made in 1963, were rejected by

the Bureau.¹⁰

A controversy developed over the Glenn-Colusa Irrigation District's right to construct a dam across Stony Creek as it had been doing for over sixty years. The Bureau questioned the District's right to do this, and the District suggested an arrangement for the exchange of water at certain times of the year.¹¹ Problems associated with the Glenn-Colusa Irrigation District's diversions were left for future negotiations.

In 1959, the District manager, Paul Dwinell, encouraged the study of the feasibility of the construction of an Iron Canyon Dam to utilize the Pit River supply and thus avoid the pressures of negotiating the water issues with the Bureau and State.¹² The plan proved to be too costly under the present circumstances. Costs had gone up considerably since the idea was first explored by Fred Tibbetts in the 1920's.

Therefore, the District was aware that it had no alternative but to try to obtain a fair settlement with the U.S. Bureau of Reclamation. One of the difficulties in completing the

PAUL DWINELL'S CONTRIBUTIONS TO THE GLENN-COLUSA IRRIGATION DISTRICT

Paul Dwinell joined the Glenn-Colusa Irrigation District in May of 1956 and was appointed to the position of Manager/Secretary within a few months after his arrival. He continued in the position until January 1970, when illness forced him to retire. Cecile Cramer described him as being:

...a quiet unassuming person. His family enjoyed their own personal privacy. He was the last to seek any great fanfare for his accomplishments. . . Perhaps this is why his efforts went virtually unnoticed . . .

Yet he counted among his friends such people as James K. Carr, former Under-Secretary of the Interior who served in this post under Secretary Stuart Udall, during the Kennedy administration, and former U.S. Commissioner of Reclamation Gilbert Stamm, to mention only two.

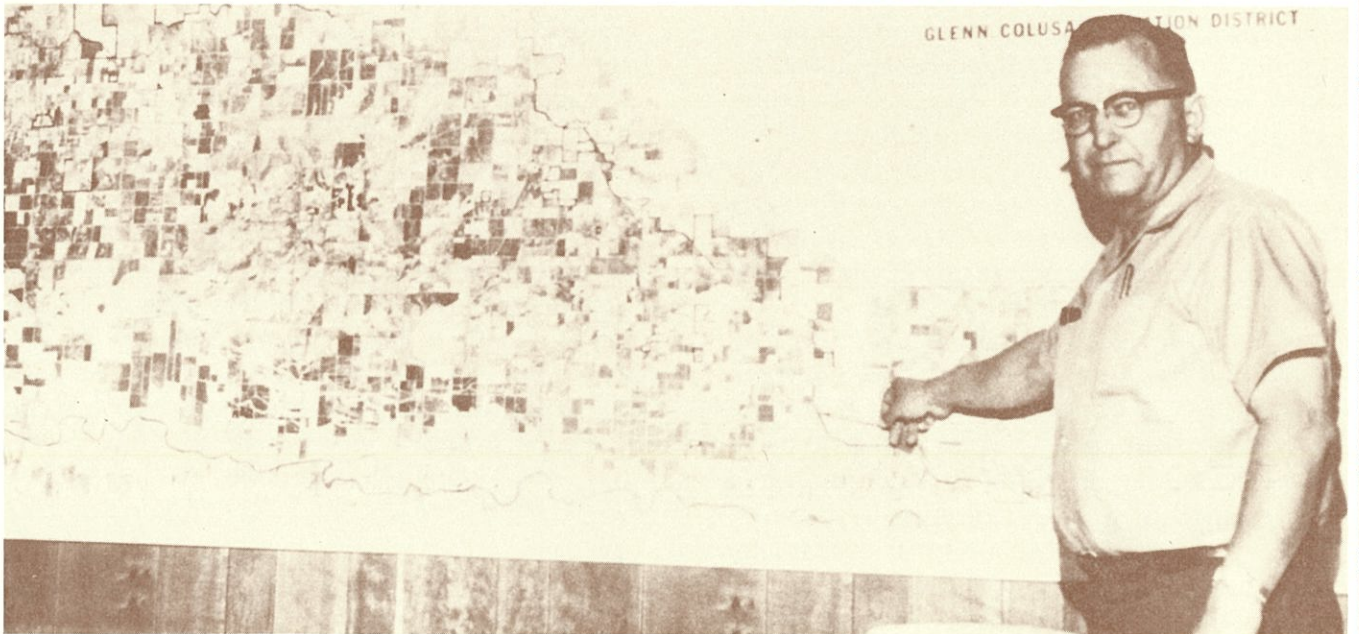
Paul Dwinell went to school in Anderson, California and then spent many years in the construction industry in Northern California, South America, and Alaska. He returned to Anderson and served as Manager of the Anderson-Cottonwood Irrigation District for a ten year period, from 1946 to 1956.

The Glenn-Colusa Irrigation District took many progressive steps under the leadership of Paul Dwinell. The District grew over thirty per cent in size and settled the long,

drawn-out negotiations with the United States Bureau of Reclamation for a Central Valley Project Supply Contract under his direction.

Other progressive steps taken by the District during this period were the development of an extensive drain water recapture program and the technique of mapping rice acreage by aerial survey. An inventory of the Glenn-Colusa Irrigation District's water distribution facilities, computerized parcel listing, and a water quality monitoring program were also implemented under his administration. The adoption of a Master Plan for rehabilitation of the main canal was yet another significant accomplishment achieved during his tenure as Manager/Secretary.

Dwinell also served on the Glenn County Water Resources Committee, the Sacramento Valley Westside Canal Association, and the Superior California Water Association. He occupied several different positions within the Irrigation District's Association of California, and was appointed to the Water Quality Advisory Committee of the State Water Resources Control Board, by Governor Ronald Reagan. His contributions to the Glenn-Colusa Irrigation District were varied, and will have a lasting effect on the progress made by the District in the future.



Paul Dwinell, Manager/Secretary of Glenn-Colusa Irrigation District from 1956-1970, examines large aerial map which designates water usage.

negotiation process, which began in 1944, was the changes in Bureau staff. The water users had dealt with five Regional Directors, who each had a slightly different policy, over the year.¹³

The Glenn-Colusa Irrigation District's first official meeting with the Bureau for negotiation purposes was held on the first day of the Sacramento River Water Rights Hearings, in 1959. They had been requested to prepare a draft of a contract for consideration by the Regional Solicitor, William Burke. This draft was summarily rejected by the next Regional Solicitor, Frank Horn, on the grounds that it was "totally unacceptable." He also stated that the only right to the Sacramento River the District possessed was the unique Congressional Act of 1906, authorizing the use of 900 cubic feet per second.

The District refused to accept this development. They hired the services of special counsel, Elmer F. Bennett, of the Washington D.C. firm, Ely, Duncan & Bennett. He had worked under the Eisenhower administration in various capacities during the 1950's, including the Solicitor of Interior and Under Secretary of the Interior.¹⁴ His expertise in these matters proved to be a great asset in the completion of the negotiations.

The impasse was finally broken when the Under Secretary of the Interior, James K. Carr, with the assistance of senators Thomas H. Kuchel and Clair Engle, and congressmen Harold T. "Bizz" Johnson, John E. Moss, and Robert L. Leggett, succeeded in having Interior Secretary Udall appoint a special committee for the purpose of reviewing the status of the contract negotiations.¹⁵

This special panel consisted of Chairman Gilbert G. Stamm, Chief, U.S. Bureau of Reclamation Division of Irrigation Land Use; Raymond C. Coulter, Assistant Solicitor for the Department of Interior, Washington; and John R. Riter, Chief Development Engineer, United States Bureau of Reclamation. The negotiating staff for the Glenn-Colusa Irrigation District was satisfied with the panel and felt that it would finally be getting a fair consideration.¹⁶

The panel explored all aspects of the Sacramento River water rights settlement. They spent two days reviewing the Glenn-

Colusa Irrigation District's facilities and views on the possible ways to resolve the situation. The panel submitted a report which was released to water users in August, 1962, and indicated that the District's plans for water use were consistent with good water management policies and practices.

Numerous meetings with the United States Bureau of Reclamation were held in rapid succession beginning in October of 1963. The Regional Director, Robert J. Pafford, had expressed the desire to reduce the differences and conclude negotiations. Most of the items pursued by the Glenn-Colusa Irrigation District were accepted and on November 20, 1963, a meeting with the Interior Secretary was held in Washington D.C. to finalize the negotiation for settlement. The one item left out was the arrangement for a "wheeling agreement," for the conveyance of water from the Glenn-Colusa Irrigation District's canal system to the Federal wildlife refuges. This was to be settled at a later date.¹⁷

Elmer Bennett concluded the final phase of the negotiations because Jack Minasian, the District's attorney, suffered a heart attack just prior to the final meeting of November 20th. The Board of Directors of the Glenn-Colusa Irrigation District approved the contract with the United States Bureau of Reclamation for supplemental water from the Sacramento River, as furnished by the Central Valley Project, on December 20, 1963.

Jack Minasian recovered in time to supervise the proceedings for the Special Election held Tuesday, March 31, 1964. The contract had been approved by the California District Securities Commission and validated by the Glenn County Superior Court; all that remained was to obtain approval of the District voters. Over twenty years of struggle to negotiate the settlement of the Sacramento River water rights were culminated when the Glenn-Colusa Irrigation District's voters officially approved the contract for the provision of water with the United States Bureau of Reclamation.

The conclusion of the Sacramento River water rights settlement left the Glenn-Colusa Irrigation District with the means to supply

Summary of Contract Provisions

Term - 40 years with right to renew on mutually agreeable terms

Water Source - Sacramento River and/or Stony Creek

Total Diversion - 795,000 acre feet

Base Supply - 720,000 acre-feet

Project Water - 75,000 acre-feet

Development Period - First 10 years can vary order of project water

Option on Additional Water - 30,000 additional acre-feet per season (good until 1974)

Price of Project Water - \$2.00 per acre-foot

“160-acre Limitation” - Applies but allows co-mingling of District and project water.
District water will be delivered to excess lands.

Drain Water - District can reclaim as it desires

Deficiencies - In case of extreme dry year, District must reduce diversions by 25 per cent¹⁸



Photo of Central Valley Project contract signing, December 27, 1963

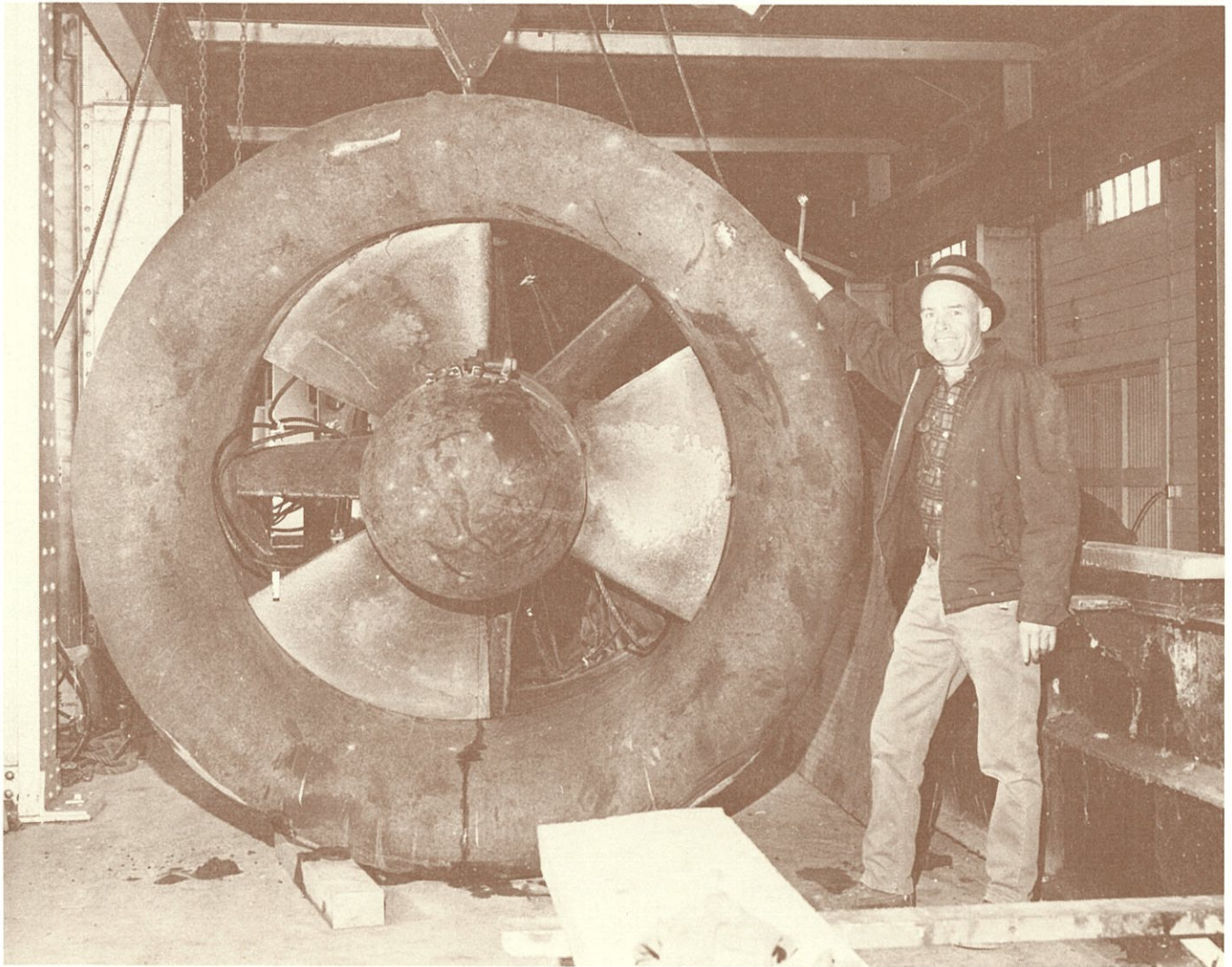
Seated, left to right: Paul Dwinell, Secretary/Manager of Glenn-Colusa; Seymour Vann, President Glenn-Colusa Board of Directors; Undersecretary of Interior James K. Carr; R.J. Pafford, Regional Director, U.S. Bureau of Reclamation; Standing, left to right: David Minasian, Attorney for Glenn-Colusa; C.N. Detlefsen, Glenn-Colusa Director; James Coakley, Admin. Asst. to Congressman Robert Leggett; Congressman John C. Moss; Max Vann of Williams; Congressman Harold (Biz) Johnson; Warren McCracken, Glenn-Colusa Director; Ben Johnson, Glenn-Colusa Director; and Joe Patten of Clair Hill Associates, Redding, Calif. (Courtesy of United States Bureau of Reclamation)

the growing demand for irrigation water. Consolidation of the Compton-Delvean Irrigation District in 1958, and the Jacinto Irrigation District in 1962, along with annexations of other lands, brought the total amount of acres within the district to 160,000, by the late 1960's. Each successive year showed a dramatic increase in the amount of acreage being planted within the district boundaries, and the need to provide a comprehensive plan for the modernization of the system was obvious.

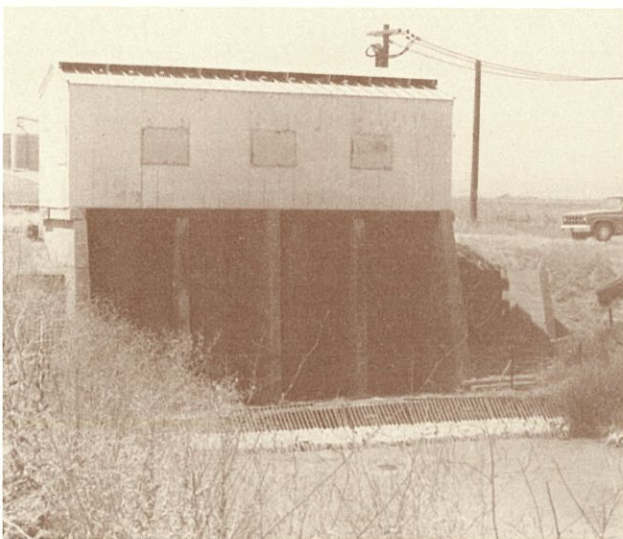
During the twenty year negotiation period, the only improvements made by the District were not part of a long term plan, but were undertaken to accommodate immediate needs. In 1948, the Glenn-Colusa Irrigation District employed Clair A. Hill, on his first private engineering job, to provide a system for reusing drainage water.¹⁹ Hill was hired again in 1951, for the pur-

pose of drawing up a proposal for an East Side Canal. This was intended to alleviate the inadequacy of the available water supply in the lower end of the District, by diverting water from drains and smaller creeks to convey them southerly in the East Side Canal. These were the only projects of any size initiated by the Glenn-Colusa Irrigation District during this twenty year span. The "piecemeal" additions that had been added to the system over the previous sixty years, along with the age of some of the pumps, resulted in the risk of serious failures.

Clair A. Hill & Associates, consulting engineers, were also responsible for the development and initiation of some measures that were essential in planning for long term expansion of the district. They had developed a Water Measurement Program for the district to aid the contract negotiations. The engineering staff of the Glenn-Colusa Irrigation Dis-



Marion Compton, pumping plant foreman, inspecting pump impeller pulled for repairs



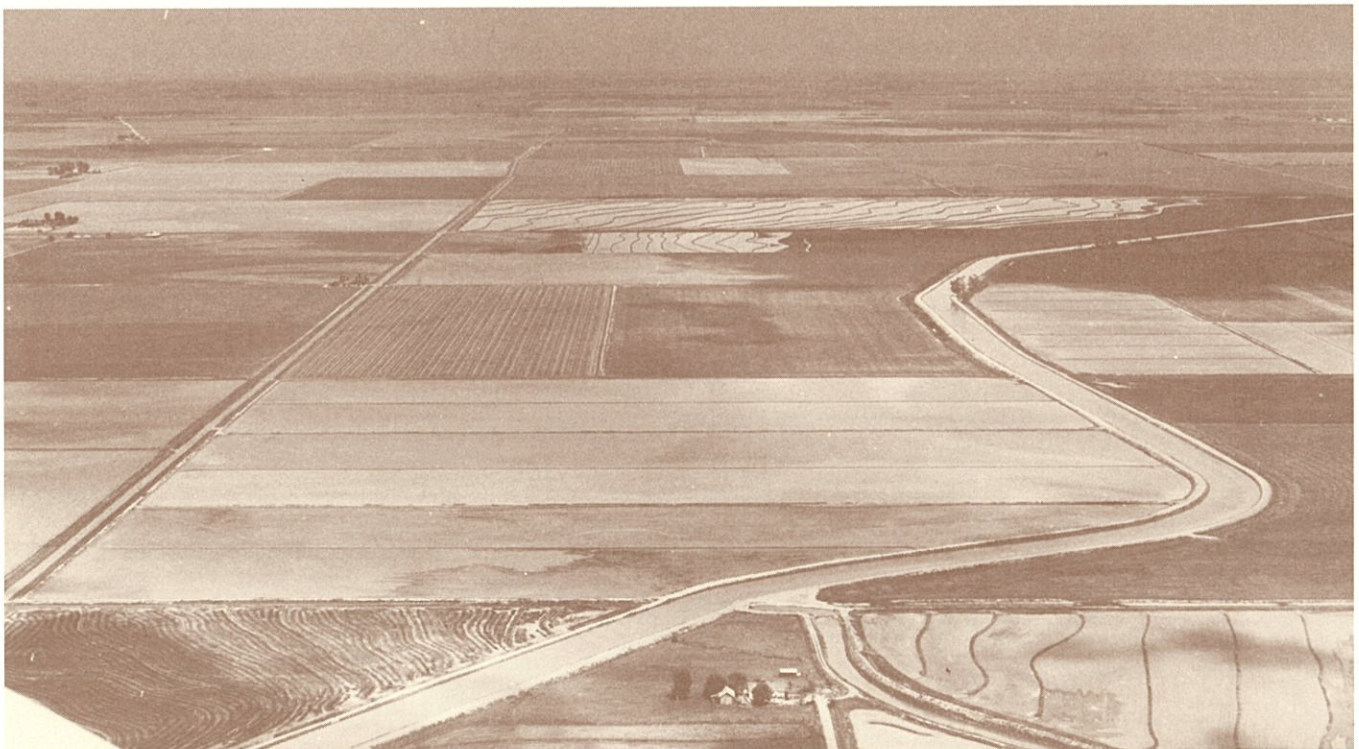
Cortena pumps, installed for drain recapture purposes in late 1940's. Approximately 1/5 of water originally pumped from Sacramento River is re-used by drain recovery inside district.

trict took over the annual preparation of the report and used it to illustrate the weaknesses in the distribution system, among other things. The Hill firm also pioneered the field of air photo surveys; some of the first were taken over the District. Both of these types of studies were implemented by the District staff as they began to plan for the inevitable expansion of the system.

The culmination of the Central Valley Project negotiations had served to direct the District's attention towards the future, and the need to plan for the growth of the system was very apparent. The development of a master rehabilitation plan became the top priority of the Glenn-Colusa Irrigation District.



Aerial photograph showing typical development of District's rice acreage






Aerial photograph showing main canal and flooding of rice fields



Footnotes

1. Paul M. Dwinell, Secretary-Manager, assisted by Joseph E. Patten, Chief Engineer Water Resources, Clair A. Hill & Associates, Glenn-Colusa Irrigation District Special Report to Board of Directors, *Sacramento River Water Diversion Settlement*, June 1964, p. 3.
2. Ibid, p. 4.
3. Ibid, p. 5.
4. Ibid.
5. Ibid, p. 7.
6. Ibid.
7. Ibid, p. 8.
8. Ibid, p. 9.
9. Ibid, p. 10.
10. Ibid, p. 12.
11. Ibid, p. 13.
12. Clair A. Hill and Joseph E. Patten, personal interview, November 22, 1983.
13. Dwinell and Patten, *Sacramento River Water Diversion Settlement*, June 1964, p. 14.
14. Ibid, p. 17.
15. Ibid, p. 19.
16. Ibid.
17. Ibid, p. 27.
18. Ibid, p. 30.
19. Hill and Patten, personal interview, November 22, 1982.

The Master Rehabilitation Plan



During the 1960's the District Board and management progressed toward a greater interest in the scientific evaluation of its water supply system. The advantages of improvements and expansion became increasingly obvious. This was manifested by the development of the annual "Water Measurement Report," in 1962, which increased in complexity during succeeding years. The growing concern over water rights settled by the Bureau of Reclamation contract in 1963, plus the increased demand placed on the irrigation system by the farmers, influenced this trend.

In the irrigation of lands many variables influence the operation of the system, and planning for any eventuality is the responsibility of the irrigation district. These variables range from weather, both before and during the irrigation season, cropping patterns dictated by government policies, market forces, and the effect of these variables on grower decisions. The dominant factor in water use, however, is weather.

Weather conditions fluctuate each year so that no two years are ever exactly alike, and the typical or normal year is virtually nonexistent. The best remembered years are the extreme ones, when the influential variables create unique situations. These are the years in which history is made in the field of water operations, and 1967 was just such a year.

The 1967 irrigation season began on March 24, but major rice flooding did not commence until approximately May 8th. This late start on the flooding of 72,000 acres of rice led to significant water distribution prob-

lems, some real and some imagined. Many growers vented their frustrations on District officials and employees who were unable to describe the water distribution pattern, or justify apparent differences in the time of flooding different areas.

After numerous meetings, both informal, and through the appearance of landowners at District Board Meetings, the Board directed at the meeting of June 1, 1967, that a Master Improvement Program be started for the main canal system. The first step towards this was completion of a detailed inventory of the lower one-third of the District's service area. Specific emergency measures were devised for implementation, prior to the start of the 1968 rice flooding season.

This decision followed the recommendations espoused previously by the District's consulting engineer, and was supported by the District's management. New techniques were devised for the water planning effort which brought together the use of aerial photography, computer tabulation, and a unique field inventory system. This was tantamount to setting up a new system, and was instrumental in assisting the engineers in the necessary planning and design. The process was greatly complicated by the need for compatibility with the existing system and accepted practices in the District.

At about this same time the District began to establish its own engineering capabilities, and with the help of the District's consultants standardized the design of canal structures. Eventually the smaller structures, like turn-outs, were built under a program developed

by the District to prefabricate units in the yard. As the rehabilitation program progressed, the District's own construction staff improved and began constructing large siphons and checks. This is how the District was later able to successfully carry out a substantial portion of the total rehabilitation project of the 1980's with their own forces.

The first step in the Master Plan was outlined in the report titled "Phase I," issued in December of 1967. It spelled out the immediate measures which should be implemented to alleviate a probable return of the 1967 spring flooding problems. The report also provided data and scope for the subsequent studies which were needed, the completion of which was planned for 1971.

One of the principle recommendations made in the Phase I report, which described the most important long term advantages and impacts, was the preparation of distribution. According to this report, the District was to begin a program for the measurement of water, delivered to the distribution system. This would allow water to be apportioned from the main canal by lateral service area. It was proposed that meters be installed during the winter of 1967-68 at all major laterals of the main canal, and at five points along its 65 mile length. The Board subsequently authorized the purchase of forty-two meters and directed that the work be done. This was no small task as an additional structure had to be built or modified at nearly every lateral headgate, in order to accommodate propeller meter installations. Within the main canal channel a method of proportional measurement of part of the flow was devised, and the measured flow was then multiplied by a factor, to give a totalized reading.

This project resulted in the first standardized structures to be designed in the modern history of the District. Several crews toiled throughout that winter to install or modify as many lateral headgates as possible, before the beginning of the 1968 season.

Starting the next year, the flow measurements were read on a daily basis and plotted on charts in the office of the Watermaster. The engineers studied the data developed, and some of the perceived bottlenecks in the main canal disappeared, while others were dis-

covered. It was apparent that many of the major structures, as well as most of the main canal sections, were undersized for the current and future demands expected during the peak rice flooding seasons.

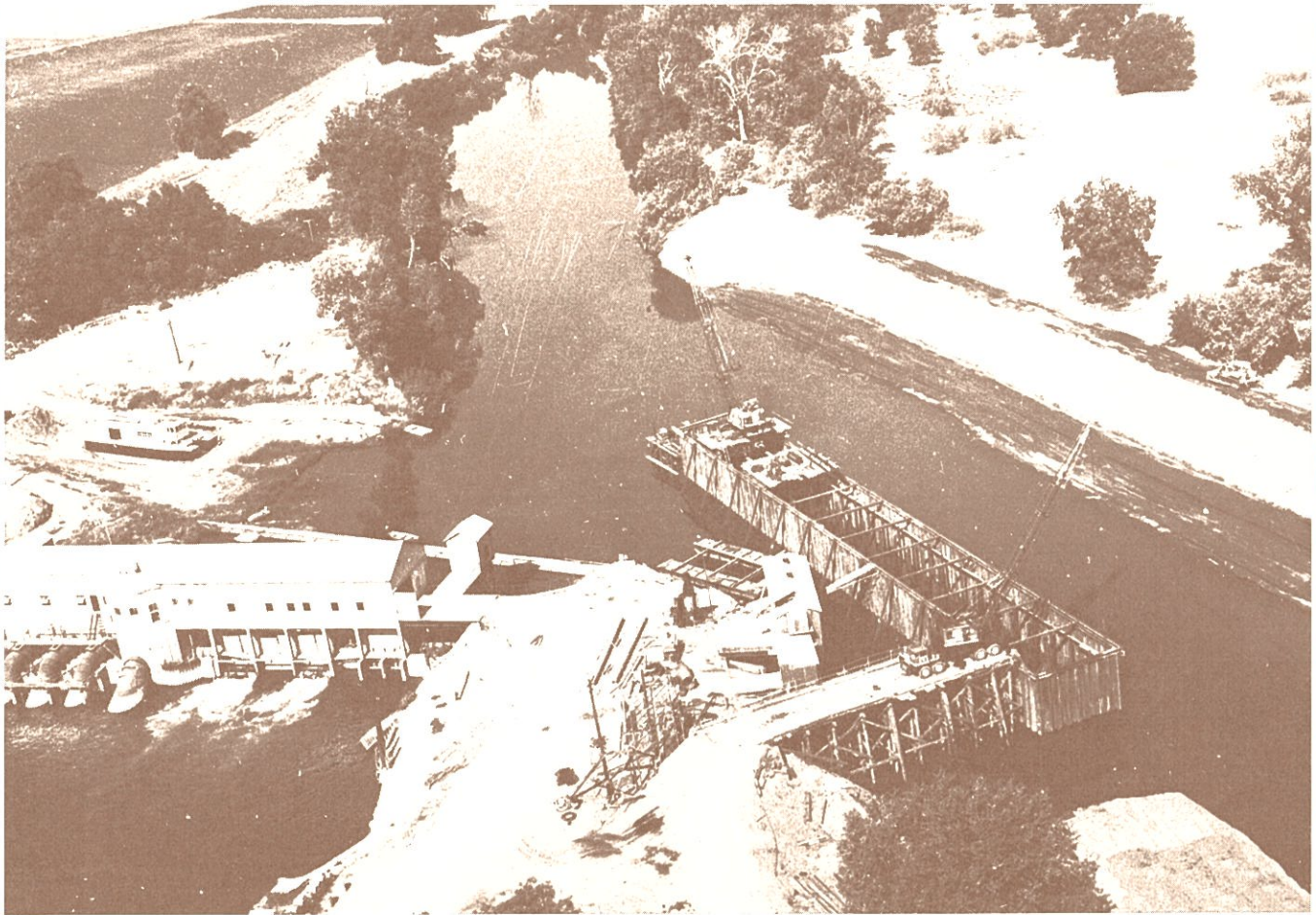
Concurrent with the District inventory of physical facilities and the development of a water measurement system, a resurvey of the entire main canal to the nearest hundredth of a foot, was undertaken jointly by the District consultant and District employees. This was needed in order to reestablish basic hydraulic data and reference points which had been lost over the years.

The Phase II Master Plan Report was presented to the Board of Directors in August of 1969. It proposed additional, significant improvements in the first forty-five miles of the canal system. The District did not face a critical flooding season in the following years and it was decided to proceed slowly. As work progressed the funds could be raised, and continued to be raised, as additional improvement work was done. The District progressed on a "pay as you go" basis each year, using both contractor and District forces. The primary effort was directed towards relieving areas where it was feared overloading the system might lead to failure. Capacity was a secondary but important consideration.

As work was accomplished and confidence in the measuring system grew, it became apparent that the information could be translated into significant improvements in the quality of service to the water users and operational control of the canal system. The data revealed that at times of peak demand, the main canal system was virtually beyond control.

With most control structures along the system in a wide open position, the only control was the amount of water being put into the system and the regulation of turnouts along the main canal. This left the operating people without adequate controls on the water level, or regulation of the quantity of water which could be put through the system at a given point. This method of operation might be compared to driving an automobile at full throttle with no brakes, where the driver couldn't speed up and didn't dare slow down, so all he could do was steer for his life!

INSTALLATION OF GIGANTIC FISH SCREEN



Fish screen under construction, 1971

The construction of a gigantic fish screen at the Glenn-Colusa Irrigation District's pumping plant, near Hamilton City, was designed to prevent salmon and other fish from being swept from the river into the irrigation canals operated by the District to provide water for agricultural use. The fish screen was paid for by the United States and the State of California, with the operation and maintenance costs to be shared by the Glenn-Colusa Irrigation District and the State of California. An article written for the October 11, 1970, edition of the *Sacramento Bee* by Cecile Cramer, "Fish Screen Now Under Construction Is Aimed at Saving Millions of Salmon," describes the project in detail:

Over 10 million King Salmon fingerlings with a potential value in excess of \$750,000 annually soon will be saved by a \$2.4 million fish screen

which is now under construction on the Sacramento River north of here.

In simple terms this means more and better fishing in the river, the bay and ocean for both sport and commercial fishermen.

The structure—475 feet long, 30 feet wide and 30 feet high, with its series of 40 rotating drum screens, each 17 feet in diameter, is being built just above the Glenn-Colusa Irrigation District pumping plant. It is described by fish and game officials as "the largest fish screen of its type in the world."(Page B5)

Dedication ceremonies for the completion of the fish screen were held on May 31, 1972. Presidential advisor, Robert E. Finch, guest speaker for the occasion, said that the screen was, "built in the best tradition of a nation dedicated to providing for immediate needs and to the saving of natural resources for generations yet unborn."



March 1971 construction tour, from left to right: Warren McCracken, Director; Fred Johnson, Director; Ralph A. Nissen, President of the Board; Ben Johnson, Director; Vern Bailey, Construction Superintendent; Chet Detlefsen, Director; Robert D. Clark, Manager/Secretary; and P.J. Minasian, Attorney.

The District progressed on a "pay as you go basis." As siphons were enlarged, new checks built, and canal sections excavated, other improvements that could ultimately be achieved in canal control and water service were recognized. These realizations, and the growing awareness that a completion date for the rehabilitation of such a massive system could not realistically be set, gradually brought the Board and management to consider outside financing as the only means for completing the system enlargements in a reasonable time. The increasing frequency and severity of electrical, mechanical, and foundation problems in the aging main pumping plant on the Sacramento River lent further emphasis to the financing problem.

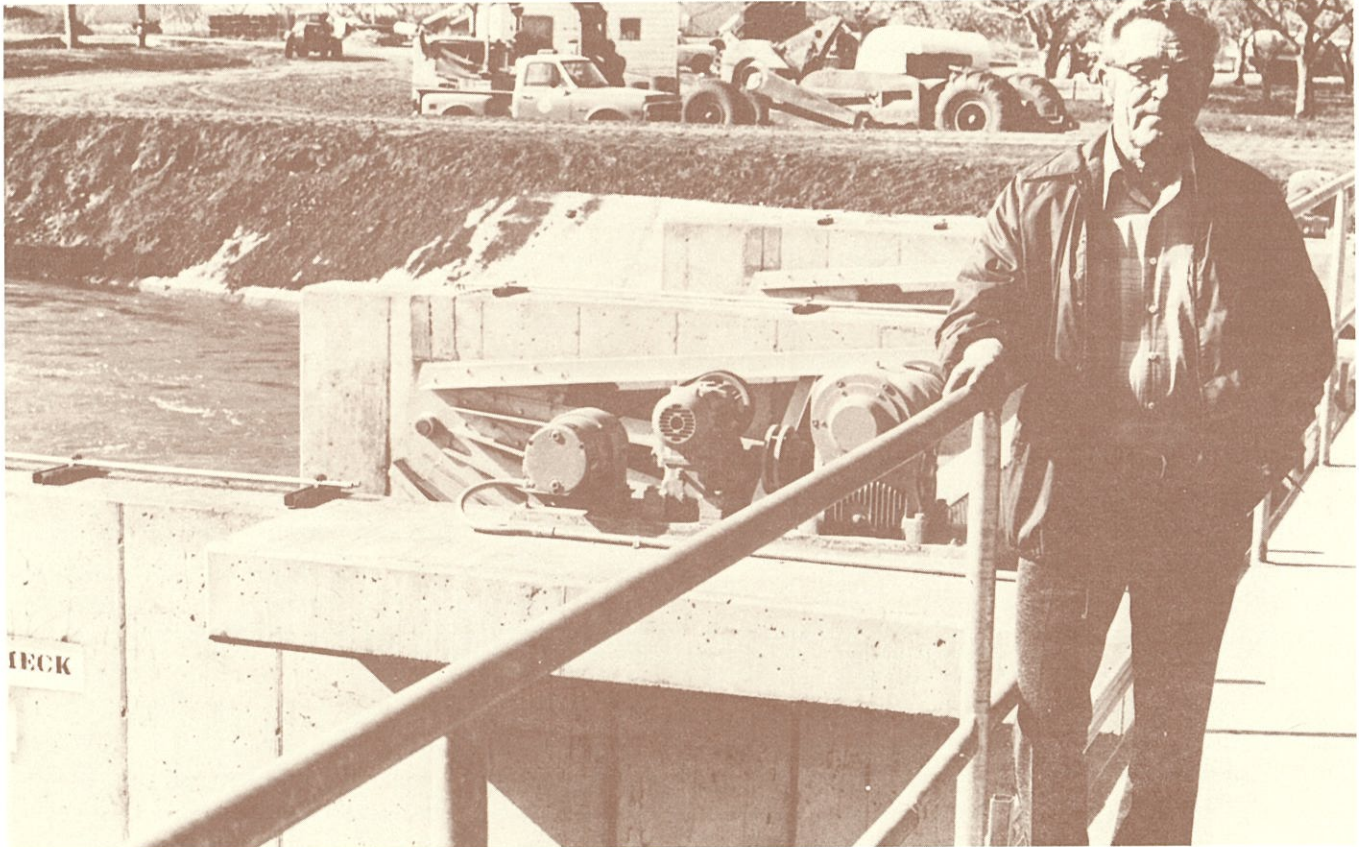
Upon recommendation of the consulting engineer, the District began to investigate the possibility of financing needed improvements through a Small Reclamation Projects Act Loan, administered by the United States Bureau of Reclamation. (Public Law 84-984).

This loan program was designed for the construction and rehabilitation of small water supply and distribution projects for irrigation, primarily outside the larger Bureau project areas. While subject to reclamation law, the program provides that interest be paid on benefits to lands held in excess of 160 acres per single ownership, thus relieving owners of other excess land provisions of the law.

With the high proportion (nearly two-thirds) of lands in the District within the 160 acre ownership limitation, the paying of interest on the remainder without requiring the sale of these lands, made the loan program attractive to the District. The effect of paying seven and one-quarter per cent interest on approximately one-third of the loan (ratio of the total excess lands to total irrigable lands in the District) is a \$17 million loan at about two and one-half per cent interest. After lengthy discussion and expression of concern over saddling the District with future debt, the Board decided to proceed with the loan



Enlargement of railroad siphon, 1967-68



Watermaster F.A. "Red" Cramer, as construction of Funk's Check nears completion in 1976



Glenn-Colusa Irrigation District crew installed radial gate (designed and constructed by District forces), at Freshwater Check and Siphon, to complete enlargement and modernization of check and siphon structure

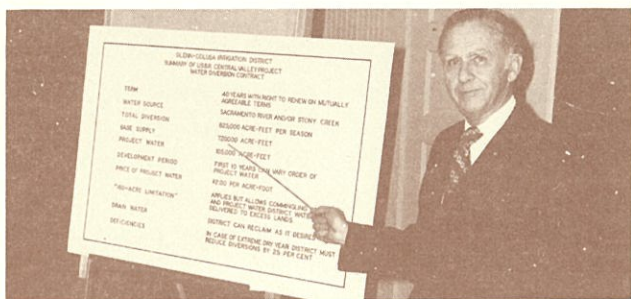
program.

One major problem arose when the Department of Interior, under President Carter, announced rules and regulations to enforce the excess lands provisions of reclamation law. This included the enforcement of the so-called "residency requirement," which would have required the benefitting landowner to live on, or in the immediate vicinity, of his land. This ruling caused the Board and Attorney considerable consternation. An Interior Department Solicitor's opinion was sought by the District to clarify whether residency requirements could be placed on landowners receiving benefits under the Small Reclamation Projects Act. The opinion was not received for six months, and the overall delay in the contract negotiations was two years, but the contract provisions were favorable to the District. The PL-984 act did not impose any additional onerous provisions of reclamation law not already required under the District's water rights settlement contract.

At the same time the District's interest in the PL-984 loan program developed, loans were limited to a maximum of \$10 million. With the assistance of the National Water Resources Association, and particularly Congressman Harold T. "Bizz" Johnson, (who represented the District in Washington and was chairman of the House Interior and Insular Affairs Committee at the time), the Act had been amended in 1971 to include an escalation factor on the loan limit tied to the Bureau of Reclamation's construction cost index. Our consultants, particularly Joe Patten, head of CH2M/Hill's water resources division, worked very closely with our congressional delegation, on all the amendments to PL-984.

The close association of our engineers and congressman to the Small Projects Program, encouraged the District to proceed with the loan. The escalation clause in the act made the District eligible for a \$17 million loan, at the time the loan application was made. Since the engineer estimated that the

P. J. "JACK" MINASIAN, ATTORNEY FOR GLENN-COLUSA IRRIGATION DISTRICT



P.J. "Jack" Minasian, demonstrating terms of Central Valley Project contract in 1974

After graduating from the Hastings Law School in the class of 1933, Paul Jackson "Jack" Minasian, first worked for the Glenn-Colusa Irrigation District as a young attorney employed by the San Francisco law firm of Hankins and Hankins.

As the Depression hit, the District and the landowners became subject to the financial problems caused by the Depression. The Hankins Law Firm became one of the experts in refunding debt issues. The refunding procedure utilized, was to provide for the issue of a refunding bond issue, and then to pay off the existing bond holders, utilizing bonds purchased by the Reconstruction Finance Corporation, a newly formed governmental agency. Minasian had become more involved in the activities of the Glenn-Colusa Irrigation District and a number of irrigation districts throughout the state during this period. He understood the problems of the farmers of the area; his family was "wiped out" by the Depression, in the Colusa area, giving him a firm idea of the nature of the problems within the agricultural region.

His law career was interrupted by World War II when he served in the Air Corps. After the war he established his practice in Oroville and specialized in water law (the firm of Hankins and Hankins had been dissolved in the late 1930's, upon the death of S.J. Hankins). There was a demand for large water storage projects after the war, and Minasian was involved in providing legal services to several significant California water and power development projects, notably the Tri Dam Project on the Stanislaus River, the Oroville Wyandotte Irrigation Project, and the Yuba-Bear River Project.

In 1958, the State Water Project to import water from Northern California to Southern California was in deep political trouble. Governor Goodwin Knight appointed a Commission of leading California water experts to provide for a solution to the political divisions. P.J. Minasian served upon that commission for over a year.

That he became the attorney for the Glenn-Colusa Irrigation District in 1955, reflects the wisdom of the Board members, who foresaw the need for defense of District water rights. His firm, which at that time represented in excess of one million acres of land within the State of California, worked for the Glenn-Colusa Irrigation District to attack the problems facing it. While serving as attorney for the District, he played a key role in the contract settlement of the Sacramento River water rights in 1964. His sharp legal mind, and scrupulous attention to detail, were key ingredients in concluding the 1974 water supply exchange contract with the U.S. Fish and Wildlife Service, for a long term water supply to the Sacramento, Delevan, and Colusa Wildlife Refuges. The PL-984 loan contract for the 1980-1984 District system rehabilitation was also carefully molded by Minasian.

Although at the time of his death in 1981, the firm which he headed represented approximately fifty water serving entities from Eureka in the north, to Bakersfield in the south, he attended the Glenn-Colusa Irrigation District Board meetings on every other Thursday. He always considered the Glenn-Colusa Irrigation District to be one of his special and most satisfying clients and projects because of its success in solidifying its water rights, relieving itself of debt, and protecting itself from the administrative and regulatory requirements of both Federal and State law.

Paul Jackson Minasian enjoyed a wide and well deserved reputation among his peers for a fairness and skilled professionalism that few achieve, and was considered one of the outstanding water legal experts in California and the nation.

(Written from excerpts of biographies compiled by Paul Minasian and Robert D. Clark)

1974 CENTRAL VALLEY PROJECT SUPPLEMENTAL WATER PURCHASE

Under the 1964 Central Valley Project Contract the Glenn-Colusa Irrigation District was limited to a 720,000 annual acre-feet supply of Sacramento River water, based upon a number of pre-1914 water appropriations. These rights had been conveyed to the present-day District and were still considered valid, although riparian rights under California law take precedence over appropriative rights. The contract also provided for the purchase of an additional 105,000 acre-feet at a cost of two dollars per acre-foot from upstream storage facilities.

The Central Valley Project Contract was signed in 1964 and was to be in effect for forty years, until the year 2004. The Glenn-Colusa Irrigation District was to be allowed to fluctuate its order for stored water for the first ten years, at which time a firm amount was to be decided upon and paid for throughout the remaining thirty years of the contract.

The District management, the Board of Directors, and Attorney Jack Minasian, were all present at informational meetings in 1974, to provide information to the landowners and determine their reaction to the contract proposal. Landowners seemed to be in favor of purchasing all the available water to insure adequate supplies, and were willing to accept increased assessments and water charges to pay for the additional demand.

At the April 18, 1974, Board of Directors meeting, it was voted to purchase all the available additional water supplies of 105,000 acre-feet. Ralph Nissen, President of the Glenn-Colusa Irrigation District Board of Directors presented the United States Bureau of Reclamation with the first half of the installment, in the form of a \$105,000 warrant, on May 2, 1974. The District was now assured of enough water to meet the future demands of the landowners.

cost of the project would be approximately \$19,300,000, it was necessary for the District to finance the additional amount.

A combination of "pay as you go" sources

were planned for repayment. Funds the District had set aside for improvements, the extra revenue provided by the irrigated lands above that previously anticipated, and the surcharges on water tolls when the loan was approved (in amounts equal to what future repayment would cost), would be used. This plan was developed to accumulate the needed supplemental funds. In addition, because of inflation during the two year delay in the contract negotiations, our engineer recommended that an additional \$2 million inflation contingency fund be set up to cover the expected rapid inflation that was prevalent in the construction industry at that time. This increased the total cost of the project to \$21.3 million, including the District contribution of \$4.3 million.

At each step of the way, the Board, staff, and their consultants seriously considered, debated, and rejected many alternatives. These included private financing, financing of a new pump station only, and continuing on a "pay as you go" basis. None of the alternatives proved viable for various reasons, and they were dropped.

The drought that occurred, in both 1976 and 1977, increased political awareness of water problems and may have assisted the District in obtaining the PL-984 loan.

The District's application for the loan was approved by Congress in 1978. The repayment contract was negotiated and finally submitted to Washington for approval, in the spring of 1980. This all coincided with the re-evaluation of water projects by the Carter Administration. However, the able leadership of Congressman "Bizz" Johnson, who could point to the cost sharing of \$4.3 million (out of \$21.3 million) to be funded by the District, helped secure the loan. The Glenn-Colusa Irrigation District project was one of the few loans that were recommended for funding by the President when he announced his "hit list" of water projects. Congressman Johnson had risen to chairman of the powerful House Public Works Committee, and this project in his home District met all the new criteria, including lack of any adverse environmental impact. This situation was extremely fortunate for the District.

The leadership of Ralph Nissen, who served as President of the Board, was vital

THE DROUGHT OF 1976—1977

The prolonged dry winter weather of 1976 led to drought conditions. The inflow to Shasta reservoir for the 1976-77 water year was 2,628,000 acre-feet, making 1977 the worst year of record, and increased the accumulated deficiency to over 1,770,000 for the two year period, 1976-77. This was greatly in excess of the contractual deficiency of 800,000 acre-feet. In September of 1976, a dry year budget was prepared based on a substantially reduced water supply.

In January of 1977, the staff began designing a rationing plan. This included the preparation of additional Rules and Regulations, and the drafting of proposed legislation, to give the Board of Directors clearcut authority to impose the rationing conditions. At the January 20, 1977, meeting of the Board, Rules 25-28 and a proposed schedule of crop unit duties were adopted, subject to public hearings. March 10, 1977, was set as the last date for which water applications would be accepted by the Board of Directors.

At the end of February, public meetings were held in Williams and in Willows. The meetings were well attended and reflected the water users general acceptance of the plans the Glenn-Colusa Irrigation District had set.

The proposed Rules and Regulations, along with an allocation of 3.7 acre-feet per acre, were considered at a public hearing on March 3. These measures were subsequently adopted by the Board of Directors without adverse comment.

Emergency legislation, which became known as AB-314, was introduced by Assemblyman Eugene Chappie, at the request of the Glenn-Colusa Irrigation District. It was passed and signed into law with an effective date of May 26, 1977.

The earlier deadline on acceptance of applications was preceded by the preparation and distribution of forms and instructions,

which placed a heavy burden on the Office Manager and his staff.

The assignment of water from one landowner was provided. The District was strict in enforcing the requirement that the landowner must sign every application, or a Power of Attorney form. This practice clearly assigned responsibility for the acreage irrigated.

There was no reasonable way the acreage in permanent crops, such as alfalfa, pasture, or orchard, could be reduced. The Board of Directors authorized a letter to those with permanent crops, advising them that they would be permitted to irrigate their acreage and would be expected to accomplish the needed reduction in water use by other means. A small number of landowners, who also farmed annual crops, were required to reduce their annual crop in order to adequately serve their permanent crops.

The Board was also confronted with a proposal from several landowners to commingle groundwater pumped from their own wells, with District water, to serve additional acreage. After considerable discussion, the Board adopted a form of agreement to be offered on a case-by-case basis to provide for the well owner to meter the water pumped into the District's system, and meter the water used on the additional land served, less a reasonable allowance for canal losses. This was done in order to permit the most effective utilization of the groundwater resources; however, enforcement of the provisions of the agreements required substantial additional inspection time by the District.

By installing the foregoing program and procedures, the Glenn-Colusa Irrigation District was able to sustain the impact of a critical year of extreme severity with only modest financial loss.

(Written by Robert D. Clark, Manager/Secretary)

to the progress of the project. His steady hand at the helm was needed as the steps were debated by the Board and concerns were raised. The contacts and solutions developed under Nissen's leadership were crucial to obtaining the loan.

Little did anyone realize that the major obstacle to the project, although it was never discounted by the Board of Directors, would be loan approval by the Districts' resident voters.

Following a petition appeal from landowners, the Board scheduled an election for approval to be held on April 1, 1980. It was decided that the best and most efficient method of encouraging maximum voter participation, would be through the use of a mail ballot procedure, conducted by the County Clerks of the two counties. This method had become available through recent California legislation.

The Board called a series of informational meetings around the District, to acquaint the voters with the proposed project. These meetings outlined the contract terms, spelled out the work to be accomplished, showed the need for the project, explained the proposed method for financing and answered questions from the landowners and water users who attended.

The election was held on April 1st, and the votes were counted that evening. The final tally was 304 for the project, and 309 against it. A problem arose with some ballots; in sending out the election material, there was confusion as to whether the law required that every voter receive both a sample ballot and an official ballot. These ballots were exactly alike, but on different colored paper; one was marked sample ballot and the other was marked official ballot. Some voters failed to realize the difference, and eighteen voted on the sample ballot form; of course, these were rejected by the election officials.

With such a close vote, and so much at stake, there was a question as to whether the marked sample ballots that had not been counted might have changed the outcome of the election. Including them in the count might contribute toward its being upheld, particularly as it was reasonable to assume

that some confusion must have occurred, due to their similarity. A recount was conducted and the sample ballots were counted, but the results would have been a tie vote of 316 to 316, which counted as failure. This recount served to convince the proponents of the plan to try again.

As a result of the close outcome, many individuals expressed an interest in placing the matter before the voters once again. A "Committee of Concerned Landowners" was formed to promote the project and call for a new election. The committee was co-chaired by Charles O. Wischropp, a Delevan area landowner and former Director of the District who was a strong proponent of the project, and Cecile B. Cramer, also a landowner and a retired newspaper woman, who was familiar with the District's plight, since she was the widow of a former District Watermaster. This committee raised funds for mailing information, developed a mailing list of eligible voters, and gained the assistance of the Glenn County Chamber of Commerce in preparation of materials.

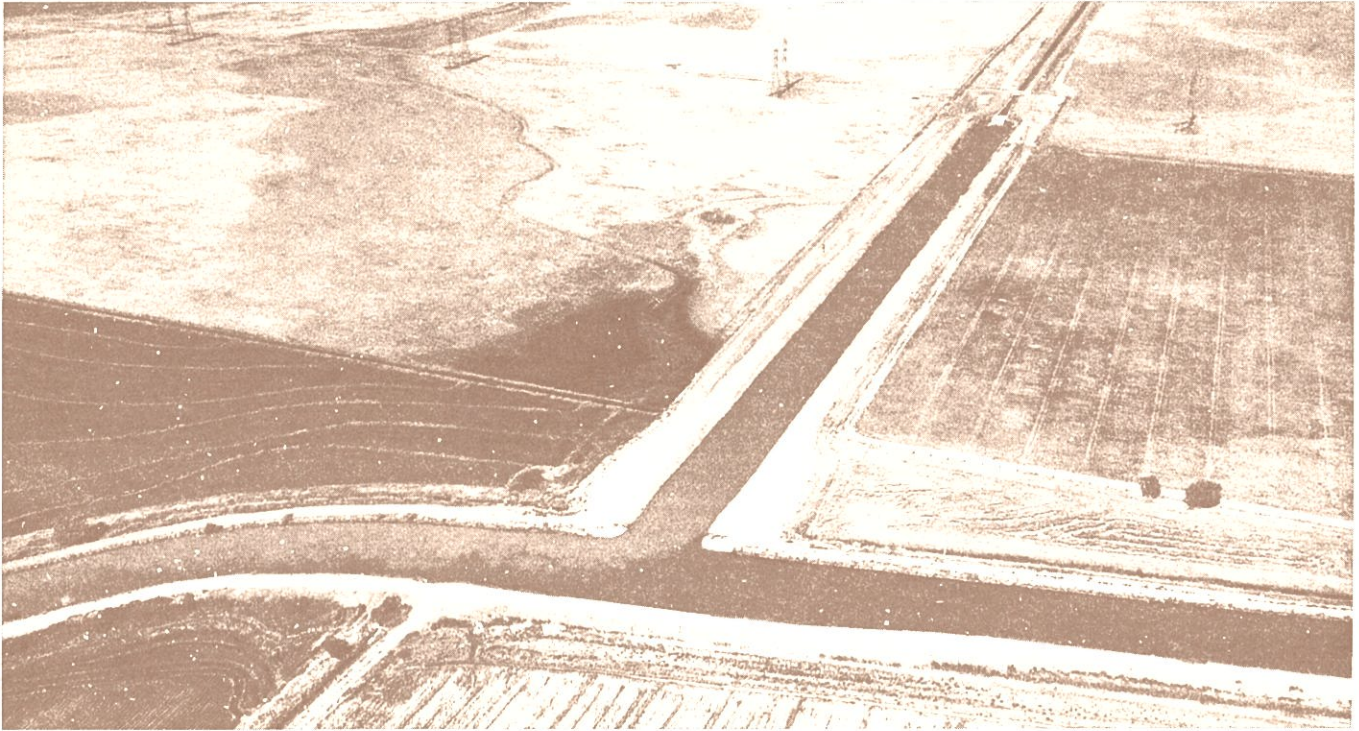
Their primary effort was to secure petitions to insure that the question for the loan approval would be put to the voters at the next earliest date. This required a petition signed by at least 500 landowners, representing at least twenty per cent of the assessed valuation in the District. The success of their campaign led to the matter being submitted for vote once again, on August 26, 1980. This time the County Clerk had sought and received a ruling from the Secretary of State, stating that it was not necessary to include sample ballots in a mail ballot election packet.

The votes were counted on the night of the election and the result was favorable for proceeding with the project, by a vote of 473 to 320.

The Board signed the contract at a brief ceremony in the Regional Director's Conference room of the U.S. Bureau of Reclamation in Sacramento, on September 11, 1980. Work began almost immediately on the engineering design for the project.

The Board had solicited proposals from five major engineering firms to determine the best firm to carry on the design and construction plans of the project, during the summer

TEHAMA-COLUSA CANAL WATER SUPPLY



Intertie photo showing entry of turbid waters from Red Bluff Fish Facilities into the Glenn-Colusa Irrigation District's main canal.

(Courtesy of U.S. Bureau of Reclamation)

The District entered into a contract with the U.S. Bureau of Reclamation for exchange of water supplies in 1974. This contract came about as the result of a mutual interest on the part of the Glenn-Colusa Irrigation District, the United States Bureau of Reclamation, and the U.S. Fish & Wildlife Service. All parties gained from the resulting contract.

The Bureau obtained a means of disposing of turbid waters from the Tehama-Colusa Canal resulting from cleaning of the gravel in the dual purpose channel used for winter salmon spawning. This avoided the need for the Bureau to acquire and construct a huge desilting basin for use during the cleaning period.

The District gained by the provision of additional water capacity during the rice flooding period. It also provided for standby emergency capacity in the event of failure of pumping facilities.

The Fish & Wildlife Service, who receive Bureau water wheeled through the Tehama-Colusa Canal, gained by receipt of a long term commitment to provide water service and off-

season fall water when their needs could be most critical.

The contract provided for the wheeling arrangements, means of construction, and water quality limitations. A major interconnection of 1,000 cubic feet per second capacity to deliver water for the Tehama-Colusa Canal into the Glenn-Colusa Canal system, was built one-half mile south of the Colusa-Glenn County line. A pipeline southwest of Williams was also planned to be built later by the District. It would convey water by gravity into the Improvement District #1 lift area consisting of about 3,500 acres. This area had been served by lifts out of the main canal, and converting the service to gravity made the subsequent implementation of small hydroelectric projects by the District possible.

The first operation of the intertie facility occurred on its completion in the summer of 1977, and was extremely valuable to the District in subsequent years, when difficulties arose while the District was still dependent on the old river pumping plant.

(Written by Robert D. Clark, Manager/Secretary)



September 11, 1980 Signing of the PL-984 Loan Contract. Standing left to right; James Moore (W&PRS), Joseph Patten (Con.Engr.), Neil Schild (W&PRS), Paul J. Minasian (Atty.), Robert D. Clark (Secy. Engr. Mgr.), Roy W. Otterson Bd. of Dir.), Tony Azevedo (Bd. of Dir.), Ben O. Johnson (Bd. of Dir.), Richard Chelini (W&PRS), Seated left to right - Cindy Cowden (W&PRS), Michael A. Catino (W&PRS Acting Reg. Dir.), Peter R. Mirande (V.P.)
 (Courtesy of Water and Power Resources Services)

of 1980. After review of the proposals, the Board and management concluded that the firm of CH2M/Hill, who had done the master plan work and engineering for the PL-984 loan application, was the best suited for design and construction of the project. This review was completed by the time of the second election, and no time was lost once the voters had approved the project.

The project's major feature, estimated to entail approximately half of the expense, was the replacement of the Sacramento River main pumping plant. The design of the plant involved the work of structural, mechanical, civil, electrical and soils engineers. A technical review committee within the engineering firm, as well as a design committee of engineers and experienced operations people from the District, was established to review all aspects of the plant design.

The plant was designed to provide 3,000 cubic feet per second, at a maximum lift of 9.1 feet, from the river to the canal. Ten pumps, ranging in size from 150-horsepower

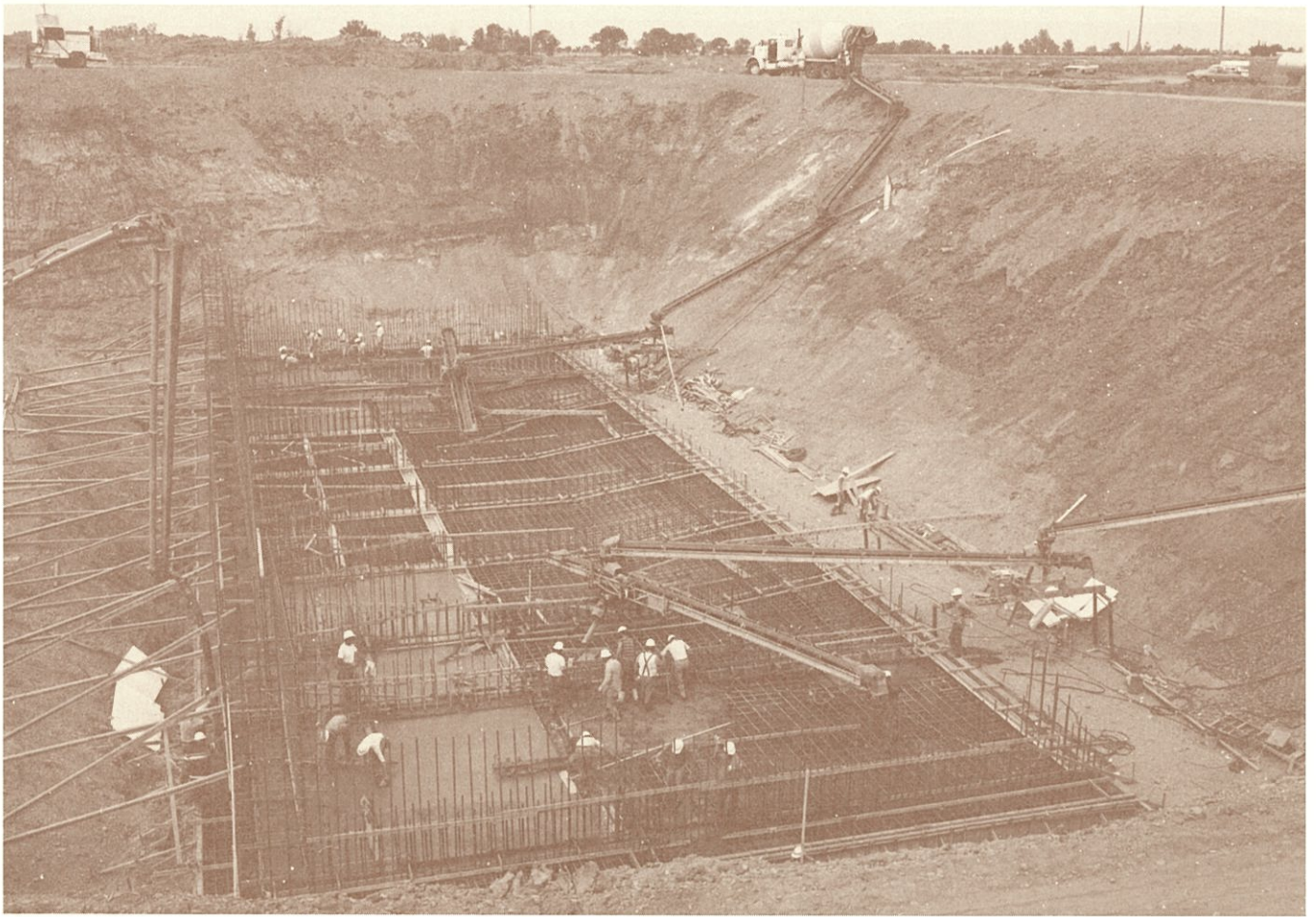
and 100 cubic feet per second to 600 horsepower and 400 cubic feet per second, were planned so that incremental changes in flow could be made.

Utilization of large, low speed, synchronous motors, and cast-in-place concrete pump bowls for the larger units, was an important part of providing low maintenance and long life for the plant. Over 6,600 cubic yards of concrete were to be placed in the plant structure. Other unique design features included the use of "reinforced earth concrete walls" for the wing walls of the plant, and the use of a slurry trench dewatering method surrounding the site during construction.

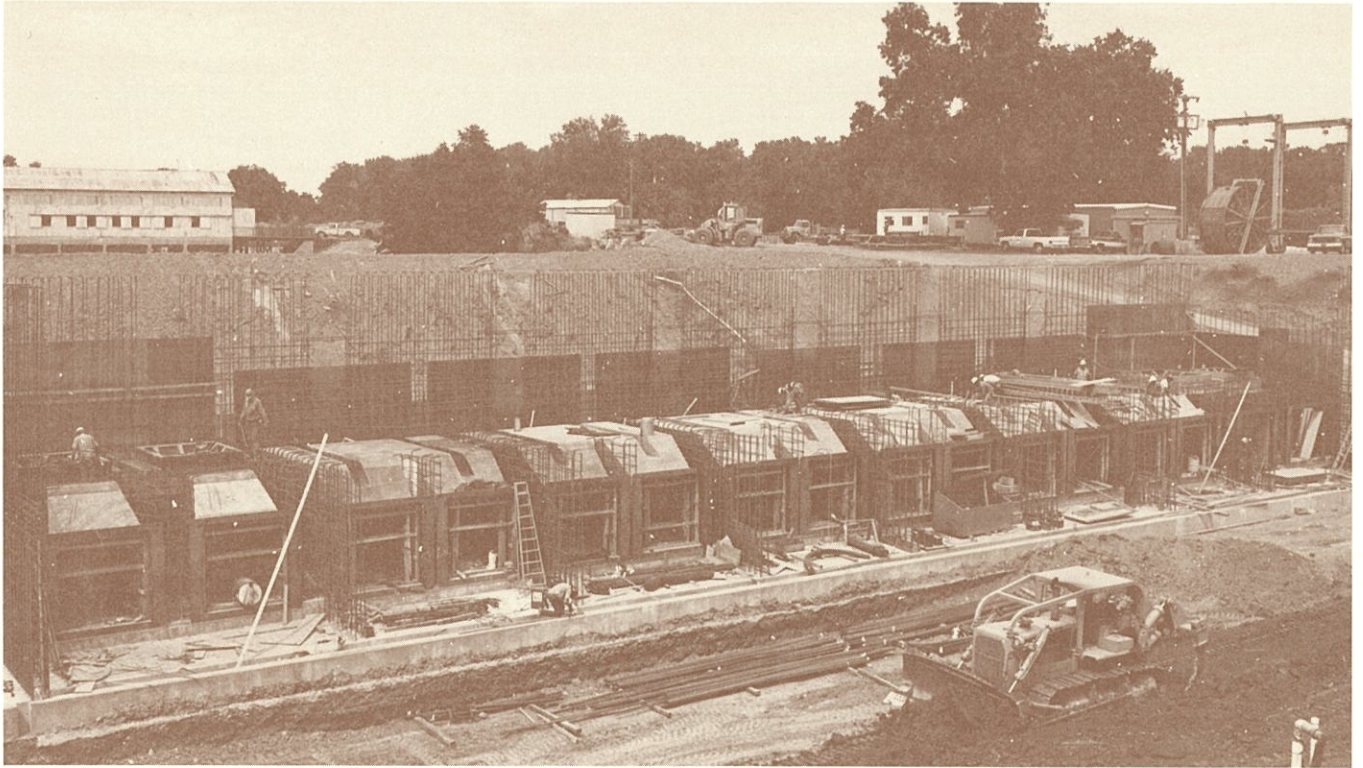
The use of a slurry trench was determined to be the most economical method of enabling the site to be dewatered. A slurry wall of bentonite was built completely around the site, approximately three feet wide and 100 feet deep, into an impervious clay layer beneath the plant. Because of the great depth of pervious gravels in the close proximity of the site to the Sacramento River, the slurry



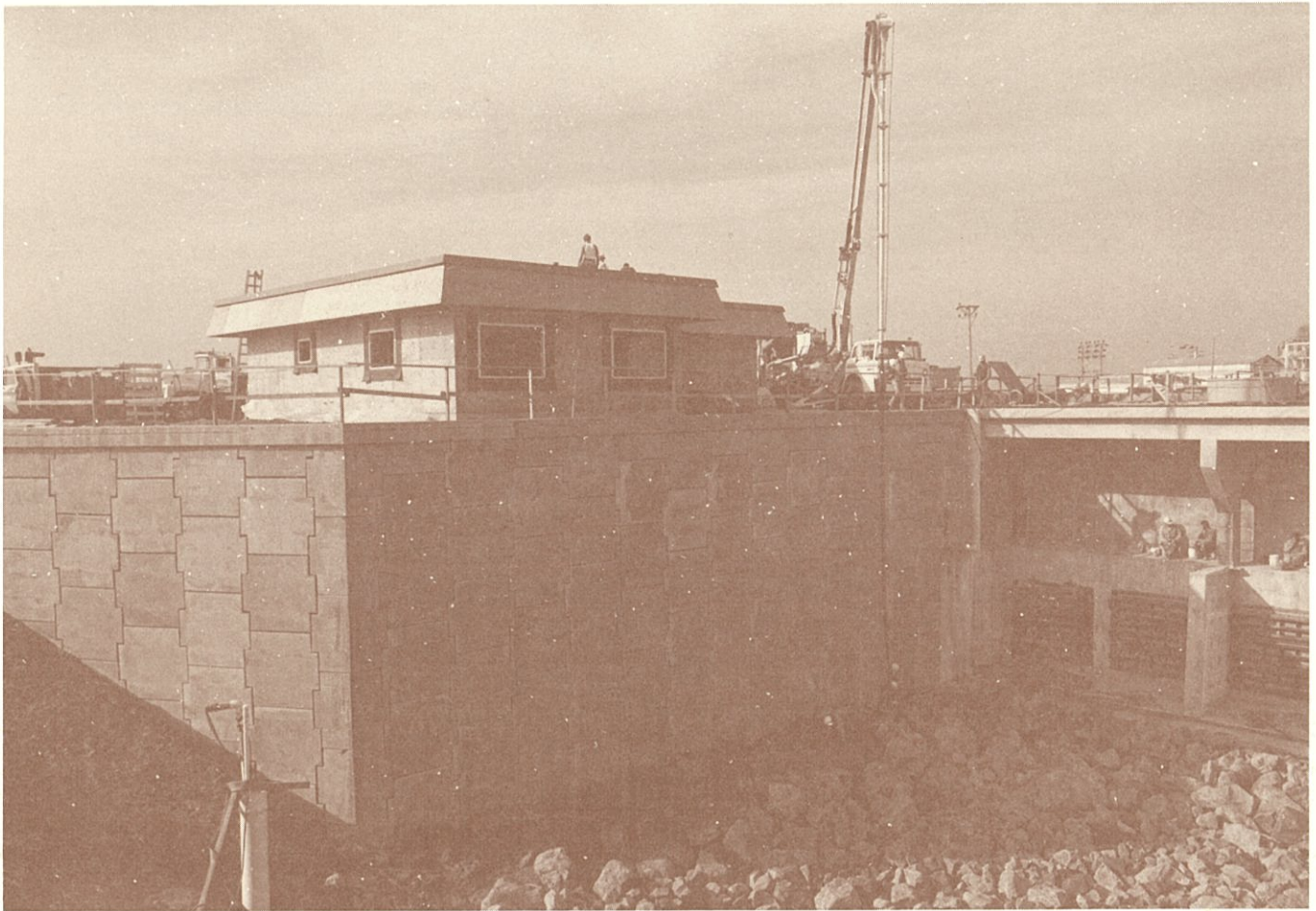
One hundred foot deep slurry trench in progress, January 8, 1982



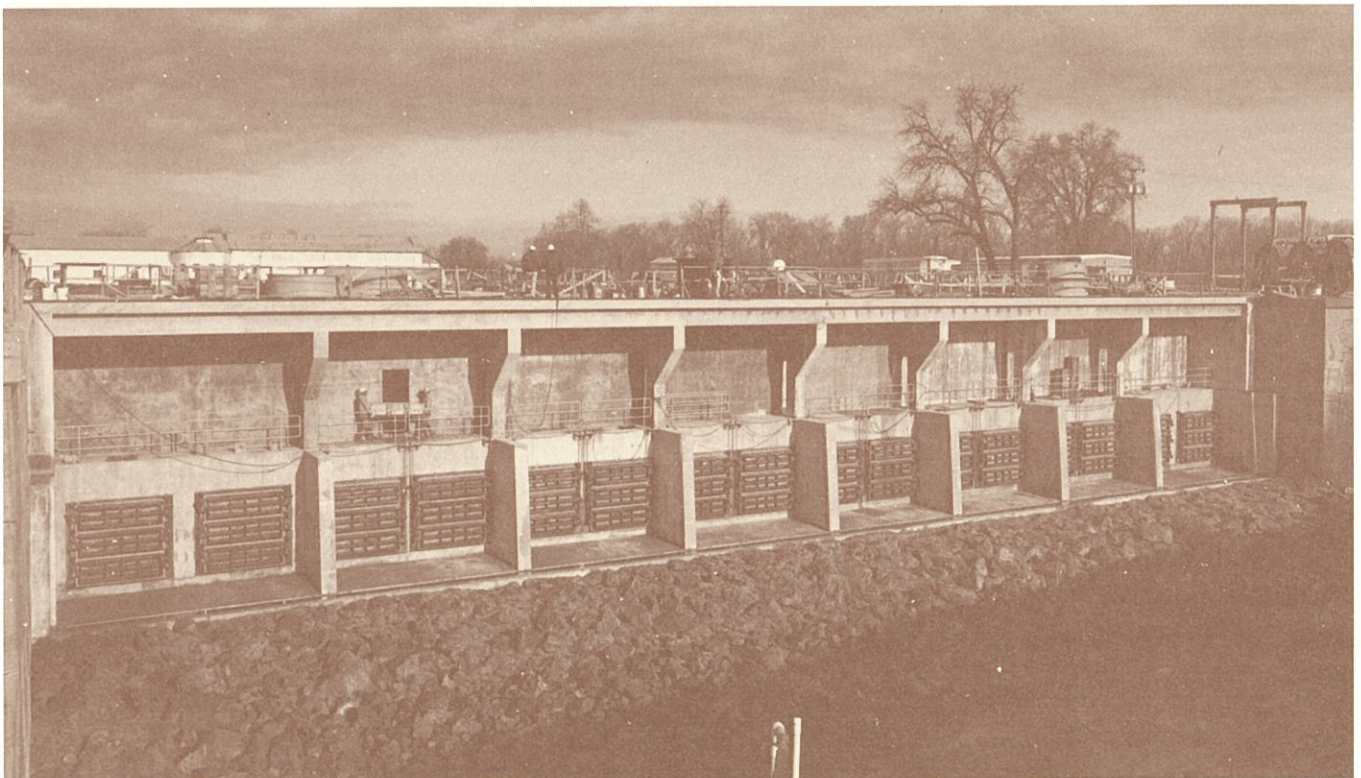
Placing reinforced concrete foundation, May 24, 1982



Constructing pump walls and discharge chambers, August 27, 1982



Main pump station control building under construction (lunch time)



Main pump station motor mounts being installed, January 28, 1983



Signing contract with R.G. Fisher Constructors, October 5, 1981
Standing left to right: P.J. Minasian, Attorney for District; Ben Johnson, Director; Pete Mirande, Director; Roy Otterson, Director; Donald Showalter, Contract Administrator, Jack Call, Plant Design Engineer, CH2M/Hill; Jonathan Whitehead, Axel Johnson Corp.; Ronald Thompson, Assistant Loan Engineer, Richard Chelini, Loan Engineer, U.S. Bureau of Reclamation; John Ankunding, Assistant Project Manager, Robert G. Fisher Company; Edwin Lance, Project Manager, CH2M/Hill. Seated left to right Robert D. Clark, Manager-Secretary, Ralph Nissen, President, Glenn-Colusa Irrigation District; Russell Gatschet, Vice President, Pete DeCarlo, Project Manager, Robert G. Fisher Company, Fresno
(Courtesy of R.G. Fisher Constructors)

trench method of dewatering was recommended as mandatory by the District's consulting engineer. Other possible alternatives and methods that could have been proposed for the dewatering, involved too much risk of failure to be selected.

The slurry trench proved to be spectacularly successful; while water was being bypassed around the site, only a 5-horsepower pump was needed to maintain the dewatered site and permit excavation to a point over 40-feet below the surrounding water surface. The low bidder on the project was the R.G. Fisher Co., of Fresno. The contract was awarded to this firm, and signed by all parties in the District Board Room, on October 5, 1981.

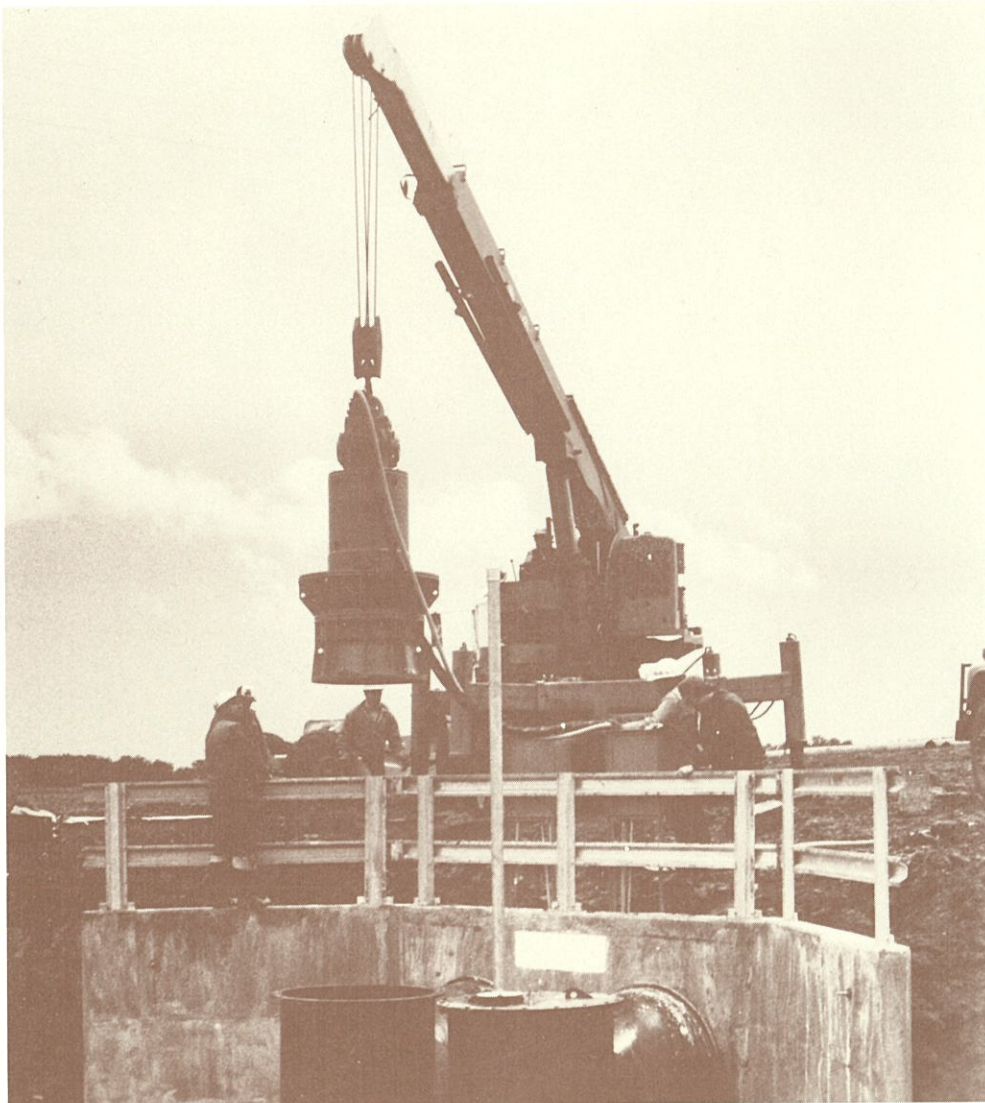
Another feature of the contract was the requirement that a model test be conducted by a qualified hydraulic laboratory. This was to determine the characteristics of the hydraulic flow into the plant and pumps, and recommend any modifications which might be justified, to improve the hydraulic efficiency of the plant design. This work was

done, and the recommendations called for sloping floors and ramps, to be built under the pump intake bowls and buffers, installed in the pump bays, to increase efficiency and reduce possibilities of any cavitation taking place as higher lifts were reached. These tests required modifications in the plant design costing over \$180,000, but were recognized as well worthwhile by the Engineers, District and Bureau of Reclamation.

The plant was planned for low maintenance and automatic operation, with remote control from the Willows office, to be implemented as confidence and experience in the equipment was achieved.

The new plant underwent testing prior to demolition of the old plant. Part of this testing included the performance testing, of the pumps in place, in the new plant. This was done by utilizing large sharp-edged rectangular weirs and running one pump at a time, while the water circulated back through the plant to the intake side. During the testing the cofferdams surrounding the plant remained in place.

SMALL HYDROELECTRIC DEVELOPMENT



*Flygt hydroelectric submersible turbines being lowered into place
(Courtesy of Flygt Corporation)*

Concurrent with its rehabilitation work, the District undertook to build and operate two small hydroelectric projects at sites where former booster pumping plants were located. These were located in an area southwest of Williams, where water had been lifted out of the main canal since the 1920's, to serve an area of approximately 3,500 acres.

With the construction of the Tehama-Colusa Canal, a pipeline was built by the District to tie into that higher canal and bring water into the former lift area by gravity. This water was supplied to the District in exchange for water pumped and delivered by the District to the Sacramento, Delevan and

Colusa National Wildlife Refuges.

While these are both small hydroelectric sites, they were attractive due to the need to reconstruct the civil works. Use of innovative submersible turbine generators minimized the complexity of the installation. The first site of 160 kilowatt capacity went on line in June of 1983, and the second site of 100 kilowatts in the following year.

The District plans to add one more site of 200 kilowatts to this service, and has also secured a permit from the Federal Energy Commission for a larger site on the main intertie from the Tehama-Colusa Canal.

(Written by Robert D. Clark, Manager/Secretary)



Dragline at work on canal enlargement and rehabilitation

The plant began operation on March 27, 1984, under the direction of the prime contractor, with final testing and operator training being conducted under actual operating conditions.

Most of the balance of the rehabilitation work was done on the main canal. A complete resurvey of the canal was made to determine the cross sectional area and flow capacity. Over 3,000,000 cubic yards of earth needed to be removed in order to return the canal to a safe capacity for reasonable operational control. In addition, fourteen check structures were constructed utilizing modern radial gates. Two siphons, which had to be rebuilt or constructed, were included in the work. One siphon and four checks were put out to contract, while the balance of the work was done by utilizing District forces and their construction abilities which had been developed over several years. District crews and equipment were supplemented by the purchase of additional equipment, and hiring skilled operators with their own equipment,

to assist in accomplishing the work.

Most of this work, of necessity, had to be done during the winter rainy period, and some delays occurred due to unusually inclement weather during 1982 and 1983. However, considerable work was accomplished so that schedules were maintained with only modest delays.

When it became obvious that the overall project was going to be completed at a total cost well within the budgeted figures, a new shop facility was built at Willows to replace the 1920's shop. One major check was also added at Mile 13 on the main canal to facilitate water deliveries to areas in the extreme north end of the District during periods of reduced demand within the system. It was recognized that the enlargement of the main canal's cross sectional area would lower the water surface at low flows in these upper reaches, and the additional control point at Mile 13 would be necessary to successfully make diversions upstream.

RALPH A. NISSEN RECEIVES BUREAU CITIZENS AWARD



Ralph A. Nissen, President of the Glenn-Colusa Irrigation District Board of Directors from 1970 to present

Ralph A. Nissen, of Williams, was presented with the prestigious Citizens Award by the Bureau of Reclamation in appreciation of his involvement and commitment to the development of public water policy. The Citizens Award, which is the Bureau's highest form of public recognition, has only been presented three times in the last twenty-five years. Assistant Interior Secretary, Robert N. Broadbent, presented the plaque at the Association of California Water Agencies Spring Conference in San Diego on April 25, 1984, along with the following letter:

"Dear Mr. Nissen:

It is with great pleasure that we honor your commitment to the wise development of California water resources with the presentation of the Bureau of Reclamation Citizen Award.

"Your years of active involvement and generous commitment of time and energy have set a standard by which all citizens active in the development of public water policy should be judged.

"Your belief in and support of the Bureau of Reclamation's mission, your sound judgment, and exemplary leadership skills make you a worthy recipient of this, the highest public award given by the Bureau.

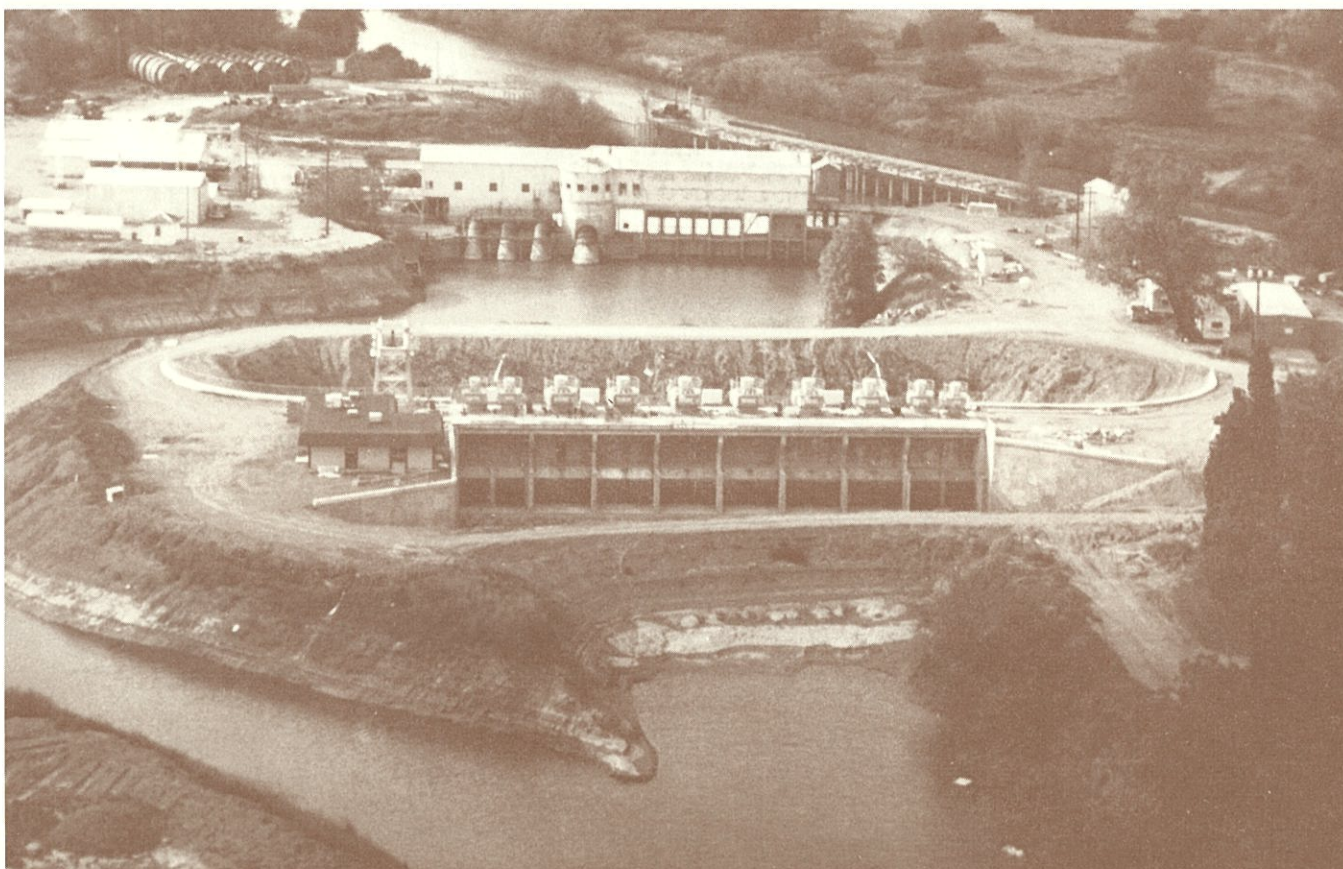
"Given the complexity of water issues in your great State of California, it is important that we occasionally pause and look back at the conflicts we have resolved and the progress we have made.

"Presentation of the Citizen Award gives the Bureau an opportunity to honor you and call on the water community to reflect on your contributions and achievements.

"Thank you, Ralph, for your consistently positive dedication to the Bureau and the cause of water development in California."

The letter was signed "Sincerely yours, Robert N. Broadbent, Commissioner."

Nissen has served in many capacities dealing with both agricultural and water matters at local, state, and national levels, through the years. He has been active in the California State Farm Bureau, headed their Natural Resources Committee, and served as a Director of the Rice Growers Association. He was elected to the Glenn-Colusa Irrigation District Board in 1965 and has served as its President since 1970. His strong leadership has been of great benefit in developing a Master Plan and implementing a \$21 million reconstruction program which is nearing completion. He has also been a member of the ACWA Board of Directors since the late 1960's, serving a term as President from 1969-1971, and is currently chairing a special ACWA Long Range Planning Committee. Ralph Nissen has generously devoted his time and energy throughout the years towards the development of California's water resources.



Aerial of old pumping plant as it appeared in its last year of operation; new plant under construction in foreground. (Courtesy of R.G. Fisher Company)

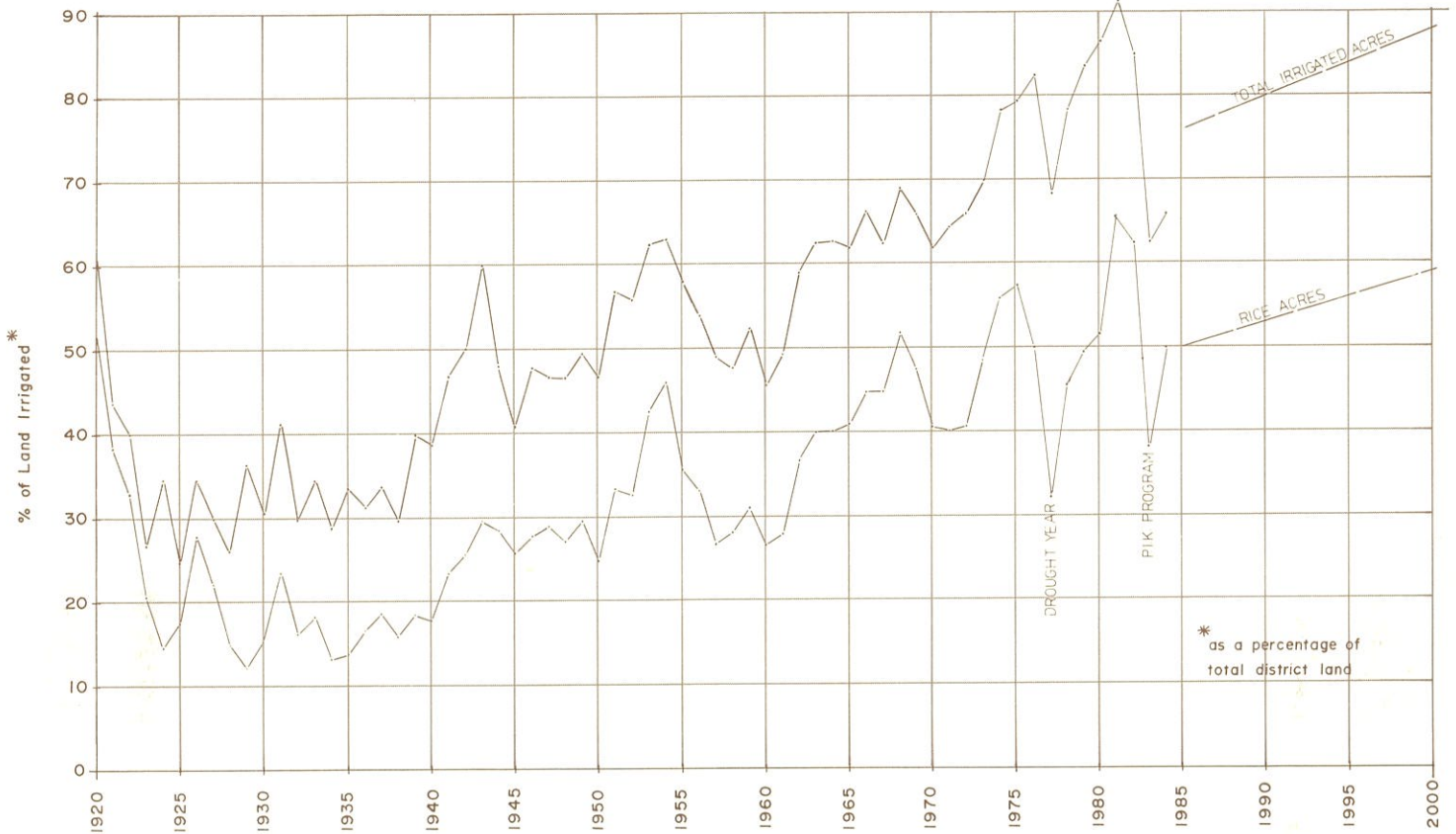
Full completion of the program extended approximately six months beyond the planned date. However, the project's total cost at this

writing will be less than \$20 million, even when the additional features are included.



A view of the completed pumping plant; old pump No. 7 is being assembled for historical display in foreground. (Courtesy of R.G. Fisher Construction Company)

IRRIGATION DEVELOPMENT IN G.C.I.D. FROM 1920 to 2000



Today, approximately 175,000 acres are served by the District, and the completion of the rehabilitation project will mark one more chapter in the continuing story of the Glenn-Colusa Irrigation District. Efforts to supply irrigation water to the Sacramento Valley, west of the Sacramento River, have been in continual progress since Will S. Green posted the first appropriative water rights in 1883.

The progress and development made in the field of agriculture in the last one hundred years is remarkable. The demand for food, along with increasing technological advancement, has helped to make the Sacramento Valley one of the world's most effective food producers. It has taken the persistence and diligence of hundreds of individuals, throughout the century, to devise, construct, and deliver water to supply the ever increasing irrigation demands.

The Glenn-Colusa Irrigation District can now look toward the future with confidence in its ability to meet such challenges. Improve-

ments in the lateral and drain recapture systems, the search for improved water supply, and unknown opportunities lie ahead in chapters yet to be written.



Appendix

Records of Service

GLENN-COLUSA IRRIGATION DISTRICT MEMBERS OF THE BOARD OF DIRECTORS 1920-1984

NAME	YEARS SERVED
Gion W. Gibson	March 1920 to January 1922
Ernest W. Eibe	March 1920 to January 1922
William Durbrow	March 1920 to April 1925
California Gibson	January 1922 to February 1929
S. C. Davis	February 1922 to June 1924
Theo Kreiberg	June 1924 to November 1925
Henry C. Sites	June 1924 to January 1939
Morrison Fetzer	June 1924 to February 1929
Abraham Boyd	April 1925 to February 1927
Byron Frost	December 1925 to February 1927
S. S. Havenor	March 1927 to August 1941
Ole Johnson	March 1927 to April 1929
M. L. Shearin	February 1929 to July 1930
L. A. Manor	February 1929 to August 1938
M. E. Pence	July 1930 to February 1933
Fred J. Johnson	March 1931 to December 1971
Frank Reckers	March 1933 to February 1945
Mario Marengo	September 1938 to March 1953
Chester N. Detlefsen	March 1939 to December 1971
George Otterson	September 1941 to February 1947
Ben O. Johnson	March 1945 to December 1981
John Baker	March 1947 to March 1955
Seymour Vann	March 1953 to March 1965
Warren McCracken	March 1955 to December 1971
Ralph A. Nissen	March 1965 to Present
Peter R. Mirande	January 1972 to Present
Roy W. Otterson	January 1972 to Present
Charles O. Wischropp	January 1972 to December 1979
Anthony Azevedo	January 1980 to Present
Harry Lee	January 1982 to Present

MANAGER/SECRETARY

Charles Lambert	March 1920 to October 1922
H. R. Allard	October 1922 to April 1925
William Durbrow	April 1925 to March 1927
H. R. Allard	March 1927 to July 1956
Paul M. Dwinell	July 1956 to January 1970
Robert D. Clark	April 1970 to Present

ATTORNEYS

Hankins & Hankins	March 1920 to July 1943
Wright L. Callendar	July 1943 to March 1955
P.J. "Jack" Minasian	April 1955 to December 1981
Paul R. Minasian	December 1981 to Present
Elmer F. Bennett (Special Counsel)	1961 to 1968

Current Leadership

BOARD OF DIRECTORS

RALPH A. NISSEN, President

PETER R. MIRANDE, Vice President

ROY W. OTTERSON, Director

ANTHONY J. AZEVEDO, Director

HARRY LEE, Director

MANAGEMENT

ROBERT D. CLARK, Manager & Secretary

S. W. DUNLAP, Controller

VERN E. BAILEY, Superintendent

WARREN C. CARLSON & BERNARD J. PENNOCK, Engineers

LOUIS R. HOSKEY, Watermaster

PAUL R. MINASIAN OF MINASIAN, MINASIAN, MINASIAN, SPRUANCE,

BABER, MEITH & SOARES, Attorney

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