

Chapter 17

The Dirt Begins to Fly

The first time John Goodier saw the Tuolumne River canyon in which his company was to build New Don Pedro Dam, he figured it would be “a tough nut to crack.”

“In construction and particularly at Guy F. Atkinson we like the tough ones. That’s where we make our living and the tougher they are, the better we like it,” Goodier said, noting his firm had built some of the world’s largest dams.

Goodier, who was Atkinson’s project superintendent on the job in 1967, explained the main problems were the river, which he described as “violent,” the terrain, and the heat, which was so severe that cement workers had to mix concrete with ice instead of water to keep it cool enough to work.

The dam was to be located in a V-shaped gorge with side slopes of up to 40 per cent. Access to the bottom of the gorge would be “very, very difficult.” During early core exploration and surveys in 1961 the only access to much of the canyon was achieved by filling a hundred-year old canal perched on the side of the hill. Barely a Jeep’s width, the outer wall built by Chinese laborers proved just as solid and secure as it had been a century earlier.

Later, after Goodier had become vice president and chief engineer of Guy F. Atkinson Company, he summarized his view of the project:

It was an interesting job for a contractor. We started building access roads to the dam site. We did everything. It had many construction features to it: two tunnels, a shaft, a powerhouse, a switchyard, a dam and a spillway – all in one job. When we left the job, it was 100 percent complete. You like to watch a project like this develop. The terrain was rugged, but it was a nice area to live in and it was a very good assignment.

Guy F. Atkinson had been awarded a \$49,693,960 prime construction contract - \$3.7 million under Bechtel’s engineering estimate – on August 22, 1967. This figure set the total project cost at less than the \$105 million estimate made May 23, 1966, when the Modesto and Turlock Irrigation Districts and the City of San Francisco formally entered into the “fourth agreement” to proceed on New Don Pedro.

The day after bids were opened, June 22, 1967, Atkinson started mobilizing equipment in anticipation of receiving the contract.

Formal notice to proceed had to await the California Districts Securities Commission's approval of the sale of the bonds which would fund the project. This came June 30th. Also needed was the issuance of a California Division of Dam Safety license, granted on July 6th. The Bank of America purchased the Modesto and Turlock Irrigation Districts' bonds totaling \$46.5 million on August 1st at 4.12 percent interest. San Francisco's \$45 million in bonds were purchased the same day by a group of Eastern banks for 3.8 per cent interest.

More than a month before the formal award of contract and issuance of the notice to proceed, the contractor and issuance of the notice to proceed, the contractor began construction of the access road to the upstream portal of the Tuolumne River diversion tunnel. Atkinson shared the districts' desire to expedite work after years of waiting for the Federal Power Commission license to be issued.

The irrigation districts did not discourage this enthusiasm. On their own part, eight months before the project was to proceed, they awarded contracts for the manufacture of powerhouse turbines, generators and other equipment. Turbines and generators are not "on the shelf" inventory items and must be built to individual specifications.

Contracts were awarded to three Japanese firms – Mitsubishi, \$1,304,878, for the turbines; Mitsui, \$1,163,530, for the generators, and Hitachi, \$213,820, for the crane – on the basis that the manufacturers would proceed only with working drawings. They were not to build the equipment until notified that the project would proceed. A \$310,352 transformer contract was signed with Savigliano of Italy on the same basis. Had the project not gone ahead, the districts were liable for the \$90,000 cost of working-drawings. The four bids were \$1.4 million below engineers' estimates.

In this way, the districts got a full year's jump on completion of the project.

By the time the formal notice to proceed was issued on August 22nd, Atkinson had gathered much of its equipment, ordered massive earth movers, established a field office, built a trailer camp for construction workers and their families, started clearing the dam site, begun work on the spillway high on the north bank of the Tuolumne and was building access roads.

From June 1967 until June 21, 1971, when the last of Atkinson's forces left the field, the canyon was a beehive of noise and activity, except for one brief moment September 16, 1968. Work was halted at that time in tribute to company founder Guy F. Atkinson, 93, who died four days earlier. Since starting his

construction business in 1901, Atkinson had built a variety of projects, including Mangla Dam in West Pakistan, the world's largest hydroelectric project, more than 10 times the size of New Don Pedro; Grand Coulee Dam on the Columbia River, the largest concrete dam in the world; Trinity Dam, a Bureau of Reclamation project in Northern California, and Hetch Hetchy's Cherry Valley Dam.

In a separate contract, the districts awarded Trico Contractors of Merced the task of clearing the reservoir site, which ultimately meant cleaning 6,300 acres of land at a cost of more than \$888,000. Trico went to work October 3rd.

MID Board President Thomas Beard, TID Board President E. L. Tomlinson and San Francisco Public Utilities Chairman Thomas White shared the honors as they set off a dynamite blast to mark the ceremonial start of the project.

Memorialized at the ceremony were three men active in moving the project ahead but who had not lived to see its start: James Smith, MID board president at the time of his death in 1966; Abner Crowell, who served for many years as TID board president prior to his death a short time earlier, and Robert Kirkwood, manager of San Francisco utilities from 1959 to 1964.

Irrigation Engineer Charles Crawford, who had been with the Modesto Irrigation District for 39 years, was named project coordinator, representing the three partners on the river. Charles S. Rippon, a veteran U. S. Bureau of Reclamation engineer, was named assistant.

Before work could be started on the dam proper, a diversion tunnel had to be built and the 1,267-acre dam site cleared.

Excavation of the 3,415-foot long, 30-foot diameter tunnel was started at the upstream end on September 27, 1967. The bore was 32.5 in diameter, providing room for 2.5 feet of concrete lining. Work was stepped up to three shifts daily, six days a week, upon completion of a bridge across a river on October 12th. Drilling from the downstream end began on January 11, 1968.

With crews working from both ends and driving an average of 29.7 lineal feet a day, the tunnel was "holed through" in perfect alignment of March 13th and was ready for lining on April 15th. In less than seven months the drilling teams had blasted and hauled out of the tunnel 106,934 cubic yards of rock and earth.

As a safety precaution, Bechtel's designers insisted upon overhead steel mesh to protect miners from loose rock, walnut sized or smaller. The safety net was resisted at first by the independent-minded miners, who were used to prying off loose rock themselves. After the first 500 feet of boring, they accepted the safety measure as expediting work. While earplugs for miners also were required, many refused to wear them. Deafness was the trademark of old-time tunnel workers.

A revolutionary 40-foot long retractable form made in the shape of the full diameter of the tunnel and operated on a 92-foot long steel-beam traveler applied the concrete lining. The rig even had special vibrators for tamping and compacting the mixed cement. With pour rates of 70 yards per hour, 20.8 feet of lining was completed each day.

The long concrete and steel-lined tunnel was completed in August and on September 5th TID Chief Engineer Roy V. Meikle set off a blast of 1,200 pounds of explosives to blow away a rock plug. The huge tunnel was ready for the river.

The following day, releases from "old" Don Pedro were halted and a 40-foot high, 160-foot long coffer dam was thrown across the river. Diversions of the water was started September 7th.

While the diversion tunnel was being bored, the work of exposing the foundation rock for the dam proceeded so that construction could commence as soon as the river was diverted. Rock that could not be moved by the immense power of a D-9 Caterpillar dozer was considered stable.

Nine days after the river was diverted, the first load of dredge tailings which were to form the outer shell of the upstream side of New Don Pedro was placed. Fire hoses were used to sluice the material down around the dam's bedrock foundation.

Thus, New Don Pedro began its steady rise toward its ultimate height of 585 feet.

Near disaster struck on January 26, 1969, when floodwaters surged over the "old" Don Pedro spillway, unleashing more than 41,000 cubic feet of water per second, more than three times the capacity of the diversion tunnel. The top 15 feet of the 40-foot coffer dam and the project's bridges were washed out. The streambed was covered with 35 feet of water, which left in its wake 15 feet of silt in the previously cleaned core area.

"We lost the bridges about midnight," Goodier recalled. "It was pouring down rain and it was dark. Up river, it really was roaring. There's nothing more dynamic than an angry river."

A full month behind schedule because of the flood, the contractor was running against a deadline which if unmet would mean the loss of a construction season. That in turn would mean a year's delay in completion. There was nothing to do but to clean up and rebuild. The deadline was made with a week to spare. Work was back on schedule by mid-summer.

Atkinson met every deadline on raising the dam. The company cut one deadline close, a single day. Goodier explained, "We did work the previous Saturday and could have worked a couple of Sundays but we didn't like to work weekends. Not only because of the added overtime, but in that hot canyon working seven days affected the men's work efficiency throughout the subsequent week."

With the river diverted, virtually no excavation was needed under the center of the dam. The river's hard bedrock was "broomed and washed" absolutely clean. Cracks and holes were filled with "dental concrete," so-called because it was used in much the same manner as when a dentist fills a tooth. Some of these cavities were rather large, though. Consolidation grouting extended 25 feet below the dam's impervious core and concrete curtain grouting was placed 200 feet under the center of the streambed. On February 27, 1969, the first of the impervious material which was to form the dam's core was placed. Ultimately the core was to be 280 feet wide.

Averaging 18 inches a day, the dam rose higher and higher for the next 15 months. Tower floodlights turned night into day and permitted three work shifts to maintain the rapid pace.

A fleet of 40 specially-built 125-ton trucks hauled materials which had been unearthed by the turn-of-the-century gold dredges. Nicknamed "belly dumps," these earth movers were mechanical marvels, the biggest trucks in the world at the time.

Powered by 750-horsepower V-16 diesel engines, they ran back and forth along a private 60-foot wide, 13-mile long specially-built haul road, delivering 75 yards of material to the dam every two or three minutes. Computer analysis had established that the most efficient highway grade was a constant 2.93 percent. The highway and the trucks' automatic transmissions were built accordingly.

Each truck cost about \$165,000, as did each of four huge scoop rigs built especially to load them. Each truck carried 400 gallons of fuel, which lasted about 15 hours. When the fuel gauge indicated 25 gallons were left, the driver would radio ahead to the fuel depot to be ready for him. As he approached the

“pit stop,” he drove through an automatic truck washer. In five to 15 minutes, the earth mover would be fueled, checked, washed, serviced and back on the road.

Washing was essential at each fueling because on the dirt roads the buildup of mud would reach 5,000 pounds if trucks were not washed regularly.

The rigs operated around the clock from 8 AM Mondays to 8 PM Saturdays, stopping only for a half-hour lunch period on each shift. At the change in shifts, the new driver would meet his assigned truck at “Checkpoint Charlie,” take his lunch and two-gallon water jug supplied by the contractor, mount his rig and “hit the road.” Routine maintenance was performed on weekends. In 15 months, the rigs were idled only 65 shifts due to bad weather.

Dust was a constant problem as the huge trucks plowed uphill at 15 miles an hour and sped down empty at 45. Roads had to be watered constantly.

The one-on-the-job fatality during the project was Modestan Emzy Herman Hoepfner, 30, who was killed when thrown from his 6,000-gallon water truck as it plunged off a 65-foot embankment on the powerhouse access road.

In their 24-hour-a-day parade up and down the canyon wall month after month, the giant earth movers were involved in but three accidents. In each case, the behemoths backed over parked pickup trucks, flattening them.

The 6-foot, 4-inch diameter tires proved to be the weakest link in maintenance of the earth movers. They were so huge they had to be made by hand and never were quite perfect. They kept separating, especially in hot weather. Each tire cost \$5,000.

Keeping the tires cool was as important as settling the dust. On much of the haul road, automatic sprinklers were installed along each side of the road, timed electrically so they would kick on a fifth of the system at a time for 10-minute intervals. These and the world’s biggest road graders kept the road smooth and dust-free.

They also provided some amusement at the expense of guests of the handful of supervisory personnel who were allowed on the haul road.

“Driving down the road in the middle of August with the temperature at 105, the sprinklers would come on,” Goodier explained. “The driver, of course, would be near the middle of the road, but the

passenger, who had his window down, would be near the edge and wouldn't know what hit him when that cold water just shot right out of the side of the road.”

Rainbird sprinklers at 60-foot intervals saved approximately \$100,000 compared with the cost of water trucks.

Silty sand mixed with clay found near La Grange was used for the core of the dam.

Tailings which had been worked over only once by the dredges contained enough “fines” – sand and small gravel – so that they were suitable for transition materials. Tailings which twice had been used in the dredges' quest for gold were coarse enough for the shells, which also contained material excavated from tunnels, spillways and abutments. It is the thick layers of coarse rock, called shells, on each side of the dam that give the structure its strength.

Two years after work began, there were 500 men on the job. The project as a whole was 53 percent complete and the dam, now 280 feet high, was 40 percent finished. The spillways were nearly completed.

Sonora Union Democrat reporter Mark Kautz referred to the “Towering Temples on the Tuolumne” in comparing the awesome works of man in building the mammoth project with mysterious Stonehenge and the Egyptian pyramids of ancient times.

On May 28, 1970, Modestan George Koetsky wheeled his 125-ton earth mover across the dam with TID Chief Engineer Meikle riding “shotgun,” to deliver the last load of material. “Topping out” ceremonies marked the completion of the dam proper. More than 250,000 trips had been made to deliver the 16,314,000 yards of material required by the dam and dikes.

The structure has three ways of controlling flood flows. One, and possibly two, of these probably never will be needed.

Internal gates installed in the diversion tunnel allow the release of 7,370 cubic feet per second of water, in addition to the 4,100 second feet maximum flow that can be released through the powerhouse turbines and 3,100 second feet through a hollow jet valve.

When these gates were installed in March 1971, Crawford expressed the hope that most if not all floods would be controlled through the power releases and the diversion tunnel gates. When flows hit 9,500 second feet at La Grange, minor downstream flooding does occur.

The controlled spillway, construction of which began August 29, 1967, just one week after Atkinson was issued a notice to proceed, was completed December 10, 1969, five months before the dam was "topped out." This spillway was designed to handle flood flows of up to 172,000 cubic feet of water per second. Although the Army Engineers indicated flows of this magnitude might be expected once every 44 years, this volume of floodwater approximates that of the worst flood in recorded history. The Tuolumne River flood of December 1955 would have attained this magnitude had there been no dams on the river. As it was, existing dams checked the flow below La Grange to less than a fourth of that.

Three steel, radial spillway gates, each 45 feet wide, 30 feet tall and weighing 135,000 pounds, were manufactured in Japan by Kurimoto Iron Works at a cost of \$233,750. They are installed at the head of a 136.5-foot rectangular, reinforced concrete discharge chute anchored horizontally and vertically by 20- and 30-foot-long rock bolts.

The last concrete had been poured on the emergency spillway near the crest of the dam on January 19, 1969. The massive concrete structure, 995 feet long and 26.4 feet wide, is anchored to bedrock by hundreds of 10- and 20-foot-long rock bolts. Designed to handle 300,000 cubic feet of runoff, the emergency spillway will be needed only in the most dramatic of floods, if ever.

Crawford commented, "If the flood for which the emergency spillway is designed ever happens, the Valley will be something else. With all the rivers in flood, the Valley will be a lake again."

Although "topping out" marked completion of the dam itself, final cleanup still was a year away. Water could not be stored behind the structure until two important tasks had been completed: clearing the reservoir site and relocating roads and highways.

Reservoir clearing was started on October 3, 1967. Before it was finished on March 31, 1971, nearly 7,000 acres of land had been stripped of trees, brush, stumps, utility poles, driftwood, fences, buildings, anything that would float. Everything had been burned and the ashes buried. Only patches of brush designated by California Division of Fish and Game representatives were left to encourage the propagation of fish. Trico Contractors also had to remove an abandoned Hetch Hetchy Railroad bridge to improve boating safety. Anything man-made was hauled away or buried.

Old mine shafts were located. Concrete seals were placed in the bottom of the shafts, which then were filled with dirt. Thick concrete caps were placed on entrances to the shafts. The reservoir must be as water tight as the dam.

To clear steep hillsides, especially in the vicinity of the Hetch Hetchy Aqueduct siphon at Red Mountain Bar, the ingenious Trico workers adopted the “yo-yo” system. One huge dozer was stationed firmly at the top of the hill and a second dozer was winched up and down the steep incline to do the actual clearing.

While spectacular to watch, the “yo-yo” proved not too hazardous. Only once did a “Cat” at the end of the line come loose. The huge tractor rolled over six times on the way down the steep hill, but the driver, protected by roll bars, walked away, shaken but virtually unscathed.

When the job was finished, the reservoir not only was cleared but also had a 160-mile fire-break-two-dozer blades wide around the entire site at elevation 830 feet above sea level.

Started before, 1960, the discussions on the relocation of roads were to drag on until the last minute, involving exhaustive negotiations with Tuolumne County and the California Division of Highways. In 1962 the MID found itself involved in a dispute as to whether the Highways 49-120 route should be rebuilt on the north or south side of the new reservoir.

A majority of Tuolumne County residents favored the north routing, but a vocal majority, sparked by people in the Wards Ferry area, preferred the south side. Because the southern route would be more expensive, require an extra bridge and mean a longer drive for Northern Californians headed for Yosemite, the districts argued for the northern route, but they lost. CalTrans insisted the southern route would be more convenient for its future plans to relocate the Highway 120 route to Yosemite.

One of Crawford’s first actions after being appointed project coordinator in 1967 was to meet with the Highway 120 Association in Tuolumne County to discuss rerouting the Mother Lode highway, which ran through Jacksonville, and the acquisition of the town. This historic community dated from 1848, when Colonel Alden Apollo Moore Jackson, a miner turned merchant, set up a supply and amusement center in a tent for the miners along nearby Moccasin and Woods Creeks.

In August 1967 Tuolumne County signed a freeway agreement with the state providing for the relocation of the Highways 49-120 route in the Chinese Camp and Jacksonville areas. The county had held

up the agreement for two years to insure that funds for the \$2.5 million, 8-mile realignment were not charged against the county's annual allocation of \$1 million in state highway funds.

After seven years of discussions, the districts and the California State Division of Highways reached agreement in March 1968, allowing the state to proceed with relocations and providing for payment by the project. The districts paid only for the replacement of highways "in kind," with any improvements financed by the state. The districts also agreed to pay "extraordinary" maintenance costs which the state might face on the new routes during the first three years of operation. Implementation of this provision was never required.

Bridges were a jinx for the project.

Weak steel was discovered in the Jacksonville Bridge after the failure of a Sacramento area bridge which had been built with steel from the same supplier. Replacement of the steel delayed construction for four months. The realigned route was not opened until April 1971, less than two weeks before the water backing up behind New Don Pedro Dam flooded the old bridge.

The districts paid contractor Peter Kewitt & Son an additional \$55,000 to go to a 10-hour seven-day-week schedule to complete work early enough to catch the spring river runoff in a slightly below-normal water season. This move saved for storage an additional 390,000 acre feet of water.

Among the other historic landmarks which would be inundated by the reservoir was the Wards Ferry Bridge 12 miles east of Sonora. The original span dated to 1878 when citizens personally donated the funds to build it. It was destroyed by fire 13 years later to hide the robbery and murder of two bridge tenders. Six years later, Tuolumne County replaced it with a 173-foot steel span.

It wasn't until December 1968 that the districts agreed to construct a new bridge at Wards Ferry. This was part of a lengthy compact between the mountain county and the two Valley irrigation districts which also included the construction of a bridge at Stevens Bar, relocation of River Road and provision of five turnarounds on roads which would dead-end at the reservoir's edge.

A 10-ton crane overturned after work finally got under way on the Wards Ferry Bridge in January 1971 and damaged the nearly completed deck. This accident forced considerable reconstruction and the bridge, one of the last to be completed, was not opened to the traffic until August 1972.

In the meantime, on May 18, 1971, the tired old Wards Ferry Bridge collapsed while the contractor was blasting near the right abutment of the new span.

Major problems were experienced also in the construction of the 1,441-foot Stevens Bar Bridge on the Jacksonville-Stent Road near Moccasin Creek. Continuous slides in the steep cuts on the bridge approaches caused the loss of 73 work days.

The Moccasin Bridge suffered less serious problems with cracking bearing pads. Difficulties were overcome and the route was opened November 25, 1970, but not until the districts had agreed to accept the responsibility for extraordinary maintenance for a period of five years. No serious problems developed during that period, however. Careful monitoring over a 10-year period showed this problem had not weakened the structure.

The new dam was ready to store water on November 2, 1970, and the portals of the old Don Pedro Dam were opened for the last time to release water downstream.

Water edged up the face of New Don Pedro Dam rapidly at first, reaching the 250-foot mark within 24 hours. As the water then rose more slowly but steadily, it climbed the upstream face of the old concrete dam which in 1923 had been the tallest such structure in the world.

Old Don Pedro disappeared under the surface of Don Pedro Lake on April 12, 1970, and was not visible again for six-and-a-half years. It reappeared in 1977 when the reservoir level was drawn down during the drought.

The water lapped over the historic town of Jacksonville in June 1970. Ultimately, the community, lively in the gold rush days, would be under 200 feet of water. The John Terry family, the last to depart, was typical of those forced to move, waiting until the last possible minute.

Land acquisition is never an easy task in large public works projects. New Don Pedro was no exception.

Old-time residents fought the districts all the way. For instance, John Turner, who operated the Taco House restaurant on an unpatented mining claim at Moccasin, called irrigation district representatives "worse than rattlesnakes." Claiming he knew because as a youth he was a professional snake hunter in Mexico and Guatemala, the 73-year-old Turner said rattlers warn before they struck. Crawford, identifying

himself “as one of the rattlesnakes,” countered by noting that Turner, who did not own the land on which he operated his restaurant, had known about the project for five years.

Land acquisition condemnation trials and negotiations were to continue long after the reservoir was completed.

A critical element of the entire project, especially as far as paying for it is concerned, is the hydroelectric generating facilities. Called for was an outdoor powerhouse with three generators capable of producing an average output of 638 million kilowatt hours of electricity annually.

Excavation of the 2,890-foot long power tunnel tapering in diameter from 18.5 feet at the upstream end to 16 feet downstream began on April 1, 1968. It was completed in 51 weeks, the most difficult part being the downstream section. Approximately one-third of the tunnel is flat, then for over a quarter of its length, it drops 81 feet on a uniform slope. The pressure of the water it carries builds as the tunnel turns down to a 50 percent slope, plunging 154.2 feet in a short 222-foot section. It then levels out for 50 feet before entering the turbines.

The flat section of the tunnel has concrete walls and the balance is lined with steel.

At the eastern end of the dam near its upstream face, 300 feet below the maximum surface level of the reservoir, a 21-by-12-foot steel gate operating on a dozen 33-inch diameter wheels provides for emergency closure. The 81-ton gate was fabricated by Voest of Austria. It was so large that it caused major problems getting through German railroad tunnels to reach the seaport from which it was to be shipped to Stockton and then carried by rail and truck to the New Don Pedro Dam site. The gate was installed on July 23, 1970.

The same month the three 61-ton transformers built in Italy were received at the Port of Stockton, the heaviest electrical equipment ever imported by this country.

At the other end of the tunnel, there were problems. The huge manifolds which divided the water into a six-foot diameter flood-control outlet and three 8-foot diameter tubes to feed the turbines were 99 days late on delivery. Furthermore, the flood-control outlet as improperly designed so it had to be rebuilt on the sight.

The manifold, consisting of three “Ys” serving the turbines, the flood-control outlet and connections, weighed 400 tons. The units were shipped to Oakdale, where they were stress-relieved in gas-fired ovens. Most of the welds had to be redone.

Each section then was trucked 30 miles to the site for final assembly. The largest section of the manifold, weighing nearly 200 tons, proved most troublesome.

Not far out of Oakdale, the driver of the special rig hauling the steel monster approached a power line which he feared was too low to clear. When he applied the brakes, the load shifted and crumpled the trailer.

After a considerable struggle, the massive “Y” was loaded onto another trailer. About two-thirds of a mile down the road, the truck hit a soft spot in the paving. The trailer wheels sank up to the bed. Another struggle.

Finally, the load reached the project haul road which was built to support heavy weights, but the difference in grade between the access road and the haul road was such that the long trailer hung up in the middle. Had it not been so heavy, it would have worked like a teeter-totter. After much head scratching and conversation by the crews, the two biggest pieces of equipment were hooked to the truck tractor and the whole load was dragged off the ridge. For a moment it was feared that the huge earth moving tractors would pull the truck apart before moving the stranded trailer.

The tunnel and all its equipment were operational by August 1970.

Meanwhile, the construction of the powerhouse proceeded, with the excavation starting July 15, 1968. The first concrete for the foundation was poured on April 14, 1969. The powerhouse, 99 feet wide and 171 feet long, nearly fills the Tuolumne River canyon; only the switchyard separates it from the downstream toe of the dam.

Because of the weight of the turbines and generators, a tremendous amount of reinforcement steel was enclosed in the structure.

Goodier recalled that on summer days the builders had problems with independent-minded iron workers hired to place the reinforcing steel into the concrete foundations. One morning, the superintendent fired two “re-bar” workers for drinking beer on the job. Going upstream to play in the river, they found a

raft and opted for a joy ride. Suddenly, they found themselves in fast water at the mouth of the 30-foot diameter diversion tunnel, which was running about half full.

“Talk about white water. That was real white water,” Goodier said. “The raft hit a center pier at the mouth of the tunnel and the partially intoxicated rod-busters were knocked off, but when the raft got around the pier they were able to grab hold of it and hang on for dear life.”

There was little doubt they would have drowned had they not caught the raft; a body will sink quickly in the foam of white water because it is so full of air. They survived the fast two-thirds of a mile swim through the tunnel, but Goodier surmised that was the wildest ride the pair ever had. They were last seen headed for home on a dead run, probably quite sober.

Non-movable parts of the turbines were installed during the first-stage pouring of concrete, which was completed in September 1970. Turbines were embedded further during the second-stage concrete pouring, at which time the generator floor also was constructed.

Next, the generators were put in place, followed by more than two weeks of operational testing. With the water rising rapidly behind the new dam, the first generator was pressed into power production on December 11, 1970, well ahead of schedule. This was done mainly to lower the water level of the reservoir because of the anxiety that the growing lake would flood the still-unfinished Jacksonville bridge and other roads whose relocation had not been completed.

The second generator was placed on the line of February 2, 1971, and the third on March 10, 1971. The powerhouse was in full operation, serving both districts.

Modesto's share of the energy would meet about a quarter of its needs. Turlock was more fortunate in that it had about 75 per cent of its power requirements met by New Don Pedro. In the years to come, the Modesto Irrigation District was to be faced with the need to search far and wide for more energy to serve a growing population.

Formal dedication ceremonies were held May 22, 1971, when some 3,000 people heard San Francisco Mayor Joseph Alioto declare:

We have harnessed a great river to serve man. There is a vision, imagination, a sense of beauty about it. Environment and development will never meet, but a delicate balance of the two has been achieved at Don Pedro Dam.

MID Board President Mathew Fiscalini, the master of ceremonies, noted that twice within a half century people had gathered on the spot to dedicate a great dam, first in 1923 and then in 1971.

When all the bills were paid, the New Don Pedro Dam and Powerhouse project had cost \$115,697,000.

Millions of dollars in bond funds not yet needed for progress payments to contractors were invested in various ways. In one instance, several thousand dollars in interest was earned in a single day because district officials hurried down a Sacramento street from the Department of Beaches and Parks with a multi-million dollar check in order to deposit it before the banks closed.

The \$8,293,000 earned by investing the bond money reduced the total amount each agency paid toward the project's total cost. In the end, San Francisco paid out \$47,380,000, the TID \$32,071,000 and the MID \$14,865,000, for a total of \$94,316,000. The \$8,293,000 earned interest plus the Davis-Grunsky \$7,623,000 and the Army Engineers \$5,464,000 paid the balance of the total \$115,696,000 cost of the project.

The construction of New Don Pedro rivals the monumental undertakings of the Modesto Irrigation District's creation a century ago, the building of old Don Pedro 65 years ago and the decision a half century ago to enter the retail power business. Each required courage, vision and determination.

In many ways, however, the completion of New Don Pedro marked the end of an era and the start of a new period filled with the challenges of obtaining new power sources, domestic water supplies and recreation management in a computerized environment undreamed of in 1887.

Continued courage, vision and determination have been demanded of those who are and will continue to meet these challenges successfully.

Recreation, the ‘Frosting on the Cake’

Even before the completion of New Don Pedro Dam, the Modesto Irrigation District entered the recreation field somewhat reluctantly. In designing the project, Bechtel engineers described recreation development as “frosting on the cake.” Before the work was completed, the districts had put far more frosting on the cake than was anticipated initially.

The Federal Power Commission, the State of California and common sense ruled that recreation demands upon reservoir the size of Don Pedro Lake would be tremendous. After all, California’s fifth largest reservoir was to extend 26 miles upstream, have a surface area of 13,000 acres and a shoreline of 160 miles. With a population of 600,000 living within 50 miles of lake and 6.3 million within 150 miles, 400,000 visitors were expected annually. Adequate provisions had to be made to meet this demand.

Although required to develop recreation resources as part of its basic construction project, the districts initially wanted no part of operating the facility when it was completed.

The California Department of Water Resources was willing to fund much of the recreation development, but the state Department of Parks and Recreation made it clear at the outset that it wanted no part of operating the project. Although it had established a state park at Turlock’s regulating reservoir, the agency claimed the New Don Pedro site did not warrant similar consideration because it had neither native landscape nor historical importance. Furthermore, it contended there were enough recreational opportunities at other Central Sierra foothill reservoirs.

In the fall of 1967 when construction of New Don Pedro got under way, project sponsors were inclined to meet the minimum requirements of the FPC license. They also were firm in their determination to get some other agency to operate the facilities. This had been done at Modesto Reservoir, where the Stanislaus County Parks Department had developed and now maintains recreation facilities. Turlock’s Owens Reservoir had become Turlock Lake State Park.

Even after the California Water Commission approved an initial \$7 million grant for basic recreation development, a majority of MID directors were not enthusiastic about entering the recreation field, despite editorial pressure from *The Modesto Bee* to do so. Thomas K. Beard, MID board president at

the time who became a positive force in subsequent development of recreation facilities, recalls, “There were a lot of people worked up about the district going into the recreation business.”

The turning point came when San Francisco Public Utilities Manager James K. Carr arranged a tour of Northern California recreation projects. Irrigation district directors saw what could be accomplished at places such as the National Park Service’s Whiskeytown Reservoir and the U. S. Forest Service’s Shasta Lake, and what should not be done at Napa County’s Lake Berryessa. As undersecretary of interior under Presidents John F. Kennedy and Lyndon B. Johnson, Carr had played a major role in the development of the Shasta-Trinity-Whiskeytown National Recreation Area, working closely with the legislative father of the project, Northern California Congressman Harold T. (Bizz) Johnson.

Those making the tour returned determined to do a first-class job at Don Pedro Lake. Over their “nervous stage,” MID directors urged increasing the design capacity by an additional 100,000 visitors per year and, with their partner, went to work to achieve a goal of providing excellent recreation facilities. Before they were done, \$7 million was invested in the effort.

The Don Pedro Recreation Agency, comprised of representatives of the three Tuolumne River partners – the Modesto and Turlock Irrigation Districts and the City of San Francisco, was created to oversee the development and operation until a suitable agency could be found to take over.

A retired veteran of 37 years of experience in recreation and conservation management with the U. S. Forest Service, George S. James was hired as recreation agency manager. As a federal forester, James had been regional director of all national forests in the northeastern quarter of the United States, ranging from Minnesota and Missouri to New England.

MID President Beard summarized the district’s determination to provide excellent recreation opportunities with the comment, “We always thought of water and power as the main purpose of this (New Don Pedro_ project, but recreation has become a third equally important use.”

Beard’s philosophy was endorsed enthusiastically by fellow MID Directors Mathew Fiscalini and Milton Kidd, who played crucial roles in the decision to develop more than the minimum required. The latter was described by recreation area manager James as a “ball of fire when it came to recreation development.”

Kidd, who had served as an MID director for 35 years including three terms as president, died suddenly on February 5, 1971, while in San Francisco for joint meetings on the New Don Pedro Project and did not live to see the realization of his dream of the recreation area achieving statewide acclaim.

Eulogized as a “man of the people,” Kidd had served on the MID Board of Directors longer than any other person. Not only was he a forceful supporter of developing the best possible recreation facilities, he also had taken an active role in all aspects of the New Don Pedro Project and other modernization programs of the rapidly-expanding Modesto district’s operations through a challenging three-and-a-half decades of service.

He was succeeded on the district’s board of directors by his nephew, John E. Kidd, who shared his enthusiasm for recreation and represented the MID on the joint agency that implemented the Don Pedro Lake recreation program.

One of the first steps to expand the recreation opportunities was the purchase of additional land to provide better boat-launching ramps and other facilities. Construction contracts were awarded. All buildings were of pole-type construction with rough-sawn redwood to blend into the environment. All utilities were placed underground. The districts and San Francisco set about creating, in James’ words, “a hospitable environment.”

A private Lake Don Pedro Corporation, headed by Emory Bonnier of Turlock, was formed and became the successful bidder for concession operations at the west end of the lake. The concessionaire returns to the districts and San Francisco 4.5 percent of its gross earnings, which currently top the \$2 million mark annually. Twice expanded, the marina now has 234 slips for motor and sail boats, a houseboat dock for 66 boats and moorings for an additional 129 houseboats. The concession operations also include a restaurant and related marina, grocery and visitor services.

By the time the recreation area was dedicated formally on May 7, 1972, Don Pedro Lake already was enjoying considerable use by boaters, water skiers, fishermen, swimmers, campers and picnickers. In spite of low-water levels during the summer of 1972, the reservoir park facilities continued “to pack them in.”

Meanwhile, the search for a permanent operator continued.

Tuolumne County, the Federal Bureau of Land Management, National Park Service, U. S. Forest Service and the Federal Bureau of Outdoor Recreation all expressed interest in managing the facilities.

As early as 1967 Tuolumne County Supervisor Ralph Thiel campaigned to have his county take over the management. He claimed Tuolumne County was responsible for the inclusion of recreation requirements in the FPC license and should take advantage of it.

Modesto directors and their partners were concerned, however, about the adequacy of Tuolumne County's resources to handle such a massive undertaking. This concern was increased by visits to Lake Berryessa, where Napa County had contracted the entire operation to a concessionaire in a manner similar to what Tuolumne County was planning. Lake Berryessa's recreation operations were considered distressing.

Not everyone in Tuolumne County favored county involvement. The county Farm Bureau urged the board of supervisors to "stick to government" and not get involved in ventures such as this. Ultimately, Tuolumne County modified its demand that the county operate the park. The county continued to insist, however, that no federal agency should take over.

This became a moot point when all federal agencies subsequently declined to participate. The last to abandon the idea was the Federal Bureau of Land Management, which manages the publicly owned foothill lands in the vicinity of the reservoir. The desire was there, but congressional appropriations were not.

The districts and San Francisco came to the realization in 1979 that they were left with the responsibility of not only developing recreation facilities but also of operating and maintaining them.

Although it was a decision made largely by default, hindsight has proved it to be most wise.

Once the decision was made, the determination that the recreation area would be operated and maintained at the highest standards of quality was reaffirmed. The districts also insisted that it be self sufficient once necessary improvements had been made.

Until this time recreation area managers had been employed on an interim basis, part of their responsibility being to find another operating agency.

Recognizing that they were in the recreation business for keeps, the Don Pedro Lake Recreation Agency in April 1980 hired Carl Rust, a retired U. S. Forest Service recreation and resources specialist. He was given the task of achieving the two goals: modernization and self sufficiency.

Both have been achieved under Rust's management.

Today the districts take great pride in the operation of what is rated as one of the best recreation areas in the West. State and federal recreation agencies point to Don Pedro Lake as the prime example of how it should be done.

That the public has responded is shown by visitor figures for 1986. Visits to recreation areas such as Yosemite National Park, the Stanislaus National Forest and nearby Exchequer Reservoir were on the decline. Don Pedro Lake, however, is attracting more people, currently hovering at or above the maximum design capacity of 500,000 visitor days of use annually. On Memorial Day 1986 there were 10,000 people at the lake. The total visitor-day use for the three-day weekend was 30,000. There were 3,000 boats on the lake at times that weekend. In the fall of 1986 reservations for 1987 were running well ahead of past records.

Today Don Pedro Lake offers 550 tent and recreation vehicle campsites, complete with hot water showers. About half of these are at Fleming Meadow at the eastern end of the dam. Also located there are the largest boat launching area, picnic areas, a white sand-lined swimming lagoon with filtered water and an extensive marina, restaurant and grocery facilities.

The Blue Oak Recreation Area on the west end of the dam, formerly called Mexican Gulch, has campgrounds, a picnic area and boat-launching facilities. Moccasin Point 18 miles up the lake has camping and picnic areas, and a marina and concession services operated by the R. D. Meeker family.

Two hundred seventy-four houseboats, including two rental fleets, are moored at the Fleming Meadow and Moccasin marina. Fishing is good. Swimming, power boating, sailing are excellent. Campgrounds and picnic areas are clean and restaurants and other concession services well received.

The districts and the city have insisted upon maintaining high standards of cleanliness and sanitation throughout the area's history. Directors emphasized the importance of family-type recreation and as a result Don Pedro is described as "everybody's lake."

The recreation opportunities at the popular reservoir are among the best in the state, disproving completely the California Beaches and Parks Department's earlier contention that there had been enough water-oriented recreation opportunities in Central California.

While Modesto Irrigation District directors and their partners in New Don Pedro's operation were learning the ropes about recreation management, they still were involved in the fishery problems.

In 1965 when the United States Supreme Court let stand a lower court decision upholding the validity of the Federal Power Commission's New Don Pedro license requirements, on issue was the required releases from New Don Pedro to sustain the salmon fishery. When state Davis-Grunsky funds were sought to help finance solving the fishery problems as well as the Don Pedro Lake recreation development, the state required, in addition to the water releases, the improvement and maintenance of some 2 million square feet of gravel-spawning beds along a 17.2 mile downstream stretch of the Tuolumne River between La Grange and Waterford.

Involved were the areas from which contractors had taken gold dredge tailings for use in building New Don Pedro Dam. In many areas the districts had not acquired title to the property, buying only the tailings. When the areas were to be reworked for spawning beds, the property owners objected. Ultimately the purchases were not required.

While the state fish and game emphasis at the time was on improved spawning beds, the districts in November 1970 voluntarily increased releases from New Don Pedro to aid in the fall salmon-spawning run in the river.

In September 1971 the districts, following fish and game specifications, were forced to complete the first-stage spawning bed rehabilitation of 1 million square feet in an area where the districts did hold title to the land. Spawning beds described as "plush" were created, but the fish didn't especially care for them. Initial on-the-scene reports indicated that most of the more than 20,000 salmon which came up the river that fall spurned the man-made beds and found natural beds.

Although subsequent Fish and Game Department reports claimed that 60 percent of the run had used 18 percent of the beds, the state agency changed its mind. The districts, after all the fuss, now were not required to rehabilitate the remainder of the designated gravel beds. Fishery experts decided once again

that the key to improved spawning would be found in the controlled releases of water, not man-made spawning beds. Thus, \$1 million in Davis-Grunsky funds earmarked for this purpose was withdrawn.

Although state fish and game biologists were to change directions several times, constant reservoir releases favorable to spawning were maintained, even though on many occasions water had to be diverted through both the MID and TID main canals and dumped back into the river below the spawning areas.

Fluctuations in the salmon run have been recorded, but in the fall of 1985 more than 40,000 fish swam up the Tuolumne to spawn. In the opinion of long-time La Grange resident Bill Keeler, an ardent fisherman who has watched the salmon run for 75 years, 1985 was the best he has seen, before or after construction of New Don Pedro.

Under the provisions of the Federal Power Commission license and subsequent cooperative agreements between the districts and the state and federal agencies, a program to monitor and evaluate the salmon fishery will continue until 1993 at a cost to the irrigation districts of several hundreds of thousands of dollars. The study that was initiated shortly after the issuance of the FPC license was delayed due to changing philosophies within the state and federal fish and game agencies.

After negotiating with the fish and game agencies in 1986, MID Chief Executive Officer H. L. Brooks, said the current release schedule of between 100 and 385 cubic feet per second between October 1st and the end of April each year and no less than 3 second feet of water the remainder of the year appears satisfactory.

Brooks warned, however, that the districts must diligently protect their water supplies in considering any future water-release flow agreements.

The results of this study undoubtedly will provide further information on the enhancement of fisheries in other areas. Thus, in agreeing to finance the research, the Modesto and Turlock districts once again are proving themselves pathfinders in efforts which will benefit the rest of the state and nation.

The local dispute had statewide implications in another direction.

As a result of protests by the riverside property owner, California Attorney General Evelle J. Younger ruled that the Tuolumne River proper was open for boating, fishing, hunting and recreation purposes, much to the objections of the property owners. Historically, property owners had prevented such intrusions, some by erecting fences across the river.

The ruling, confirmed and broadened in subsequent years by case law resulting from court actions, now has statewide implications as to the accessibility of rivers bordered by private property.