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Los Angeles and the Owens River Aqueduct

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LOS ANGELES AND THE OWENS RIVER AQUEDUCT

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Claremont Graduate School: 1978

Competition for water has been a constant theme in California history. The struggle to obtain adequate supplies is well illustrated by the efforts of the City of Los Angeles. In 1913, the city began to supplement its own limited resources and by the 1970's was obtaining approximately eighty percent of its total water supply from distant watersheds. This additional water permitted Los Angeles to develop into one of the nation's principal industrial centers and to become the most populous city in the world located in a semiarid area.

Initially, the city was totally dependent on the Los Angeles River. Because the seasonal and fluctuating nature of rainfall often made water scarce, Spanish and Mexican governments gave early settlers priority to the river's flow. This preference was called the pueblo right, and it eventually became one of the most significant municipal water rights in the state.

During the gold rush another important water right evolved as an outgrowth of the need for large quantities of water for successful mining operations. Throughout much of the gold country streams and gullies usually were dry from April through November. To work their claims, miners tapped water sources up to 200 miles distant, then,

to protect their water rights, developed the doctrine of appropriation. This doctrine stressed priority of claim to, and beneficial use of, water and became a cardinal part of California water law.

On the basis of appropriation and the pueblo right, Los Angeles imported and protected supplemental water. Between 1893 and 1904, a series of dry years reduced water supplies throughout Southern California. Simultaneously record-breaking growth pushed the city's population from 6,000 (in 1876) to 200,000 (in 1904). To ensure that immediate needs could be met and, more importantly, to permit further growth, Los Angeles acquired rights to surplus waters of the Owens River in 1904-05 and by 1913 had completed a 233 mile aqueduct to transport the water to Los Angeles.

During the 1920's, a second dry period and continued growth caused the city to purchase over 300,000 acres of land in the Owens Valley specifically to acquire additional water rights. Largely due to these purchases, the valley's economy shifted gradually from agriculture to recreation. The valley was ideally suited for this important new industry, and Los Angeles encouraged and supported its development. By the 1970's American leisure-time expenditures were doubling every eight to nine years, and the valley's economy had become more prosperous than would have been possible had it remained an exclusively

agricultural region.

Chapter one of this paper discusses the development of the Los Angeles River from the founding of the pueblo in 1781; chapter two explains the source and availability of water in Owens Valley; chapter three traces the development of California water law from 1781 to 1928; chapter four treats the rise of the recreation industry in Owens Valley; and, concluding, chapter five discusses the historiographic controversy that has surrounded the Owens River Aqueduct--the first major development of a distant watershed by a California municipality.

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Approved by:

We, the undersigned, certify that we have read this dissertation and approve it as adequate in scope and quality for the degree of Doctor of Philosophy.

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Introduction

Water is one of the most important elements distinguishing the earth from other planets in our solar system. Without water our entire globe would be little more than an ocean of burning sand.

Just as man has learned to manage and apply many of the solid elements to his advantage and welfare, so he has learned to manage and apply a portion of the liquid elements. To the extent that he has been able to conserve and distribute water, man has been able to conquer many of the otherwise uninhabitable desert regions of the earth.

The importance of man's efforts is nowhere more clearly illustrated than in Los Angeles, the nation's third largest city--and the largest metropolitan area in the world located in a semiarid region. Since the founding of the city in 1781, many major factors have contributed to its phenomenal growth. Completion of the transcontinental railroads provided rapid, reliable, and inexpensive transportation. Construction of a man-made harbor opened the door to world-wide markets. Discovery of enormous fields of oil and gas furnished fuel for industry. A moderate climate attracted hundreds of thousands of people who provided not only a labor force

but also an insatiable local market for industry. Yet, water has been the controlling factor in the expansion and development.

Without importing approximately eighty percent of its water supply, the city's population could not have increased to nearly three million by 1970; the railroads would never have become so vital a transportation link; the harbor could not have grown into the second most important in the United States; and the area would not have developed into one of the leading industrial centers of the nation.

Of all the ingredients in the city's growth, only the mild climate was available for the taking. All other contributors required development, and, without exception, they all have been the center of a controversy on one occasion or another. The route of the first transcontinental railroad, for example, was not settled until the South had seceded from the Union; the Southern Pacific became the focus of a heated political effort to remove it from control of California politics; location of the deep-draft harbor at San Pedro followed only after a lengthy battle between the Southern Pacific and the Free Harbor League; and the 1969 Santa Barbara oil spill catapulted the off-shore drilling controversy on to the national consciousness.

The duration of the diverse controversies has varied. In general they have attended the particular development, as in the case of the harbor. Occasionally they have been revived by subsequent events, as occurred when the federal government announced plans to decrease American dependence on foreign oil supplies by increasing off-shore drilling. In the case of water developments, however, the arguments have never ceased--contention has spanned the lifetimes of all the projects.

When the Metropolitan Water District was established in 1931 to import water into Southern California from the Colorado River, Arizona resisted. With an eye to its own future development, Arizona launched a gunboat from its side of the river in an effort to stop construction of Parker Dam, the point of intake for the aqueduct. California won the first round, and the dam was built. Each year California drew up to as much as five and one-half million acre feet from the river.

Arizona's resistance did not stop, however; she carried the fight to the United States Supreme Court in what became one of the most intense struggles over water rights in the history of the West. In 1963, Arizona won the second round: the Court reduced California's annual allotment from the river by over one million acre feet

to provide water for Arizona's Central Project.[1] The fight then transferred to Capitol Hill where, in 1968, Arizona succeeded in persuading Congress to authorize construction of the one and one-half billion dollar project. But in 1977 the water system was stalled by critics and far from complete. Whether the project, which would draw on the already bankrupt Colorado River, would ever be finished was moot.

In California, north-south dissension and bickering in the legislature for years stalled the state's most comprehensive water development, the California Water Plan. Then, during his first term, Governor Edmund G. Brown used his prestige to obtain passage of the legislation, and in November 1960, the necessary bond issue was presented to the electorate. By a narrow margin of only 175,000 Southern California votes, out of 5,750,000 ballots cast, the bonds were approved. Seven hundred foot high Oroville Dam was completed, and in 1971 the 444 mile aqueduct delivered its first water to

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[1] Arizona v. Calif. et. al. 363 U. S. 546 (1963). California was to receive 4.4 million acre feet, Arizona 2.8 million acre feet, and Nevada 300,000 acre feet. For a discussion of the case, see Norris Hundley, Jr., "Clio Nods: Arizona v. California and the Boulder Canyon Act--A Reassessment," Western Historical Quarterly, III, No. 1 (January 1972), pp. 17-51.

the south. In 1977, however, opponents of the project still held up completion of a vital forty-three mile link, the Peripheral Canal.

This section was designed to transport fresh water around the central delta region and simultaneously furnish water to prevent saline waters from San Francisco Bay from intruding on the estuary. Critics and environmentalists charged the canal would be used only to rob the delta of fresh water and would not prevent salt water intrusion into the delicate swamp and marsh lands of the estuary. With no compromise in sight, completion of the link was questionable, or, at the very least, it seemed assured the battle would continue for years.

The most extensive water development controversy in California concerned the Owens River Aqueduct. Built by Los Angeles just after the turn of the century, the canal was then the longest municipal aqueduct in the world. Its construction not only paved the way for Los Angeles to grow into one of the significant metropolitan areas of the world, but also it presaged a new era in California water resource development. In addition, it marked the beginning of sustained criticism of water developments. From the outset, the project was attended by struggle and contention ranging from the manner in which Los Angeles

first had developed its own resources to the effects the exportation of water had on the Owens River Valley.

The following pages recount the struggle and criticism that went into bringing the first imported water to Los Angeles, the reasons the water was necessary, the legal bases on which the water was acquired, and the end results on the distant Owens River Valley.

Chapter I

The Los Angeles River

He turneth the wilderness into
a standing water, and dry ground
into watersprings.
And there he maketh the hungry
to dwell, that they may prepare
a city for habitation;
And sow the fields, and plant
vineyards, which may yield fruits
of increase.

Psalm 107

God may have intended Southern California to be a desert. He made it a bleak and arid land and located there the only genuine desert regions in the entire United States, the Colorado and the Mojave. Yet, by importing water man has lifted the pall of aridity from a portion of the land and made this quotation from the Hebrew scriptures a fitting description of that portion, Los Angeles.

In its primeval state the Los Angeles area was a stark and isolated wilderness like the desert regions. Only the trickle of a small river distinguished it from its arid neighbors 100 miles to the east. The presence of that slender ribbon of water was a crucial distinction; it afforded men of vision the opportunity to found a settlement, plant vineyards, and sow fields in the wilderness. Through their efforts and struggles to

bring additional water, they turned the dry ground into a verdant land and the wilderness into a habitation for millions. By 1970, 2,800,000 people--nearly fourteen percent of the state's population--lived in the settlement which had become the City of Los Angeles.

Recorded struggles began in 1769. On August 2, a group of weary Spanish explorers, two weeks out of San Diego, were groping their way toward Monterey when they stumbled into a "spacious valley" and rested on the banks of a "beautiful river." In recording the discovery of the Los Angeles basin in his diary, Father Juan Crespi, journalist and chaplin for the expedition, noted that "the plain where the river runs is very extensive. It has good land for planting all kinds of grain and seeds, and is the most suitable site of all that we have seen . . . for a large settlement."[1] Twelve years later, along the banks of that "beautiful river," which was only a small stream, the seed was planted that eventually grew into a "large settlement."

In a move to protect upper California from perceived Russian and English threats, Spain launched a program of expansion into its distant northern province. By 1770 explorers led by Captain Gaspar de Portola and

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[1]As quoted in Herbert E. Bolton, Fray Juan Crespi, Missionary Explorer on the Pacific Coast, 1769-1774 (Berkeley, 1927), p. 147.

Father Crespi had located the famous harbor of Monterey and established a mission and presidio. Then in 1781 the Spanish founded a pueblo beside Crespi's beautiful river. On September 4, eleven families led by Corporal Jose Vicente Feliz trudged toward the river from nearby Mission San Gabriel along the future Mission Boulevard. Reaching a site on the west bank, the little group of forty-four persons unloaded their mules and began the arduous task of building homes and the unending toil of tilling fields in El Pueblo de Nuestra Senora la Reina de Los Angeles, the future City of Los Angeles.

Spanish pueblos were farming communities, and in semiarid Southern California the farmers were totally dependent upon the river both for irrigation and domestic water. To ensure a steady supply, the settlers quickly constructed a diversionary dam on the river and a canal to transport the water. This first dam was located upstream from the pueblo in the vicinity of the modern North Broadway Bridge and the ditch ran west of the cultivated lands directly to the town plaza. There water was drawn first for domestic use before the zanja madre, or mother ditch, carried the water out to the surrounding orchards, vineyards, and fields for irrigation.

As the pueblo grew the distribution system was expanded. In 1857 a second zanja was added; in 1860, a third; by 1888 ten zanjas wandered through the community

lacing it to the surrounding area with over ninety miles of canals and ditches. For over 120 years this early distribution system carried water to various parts of Los Angeles.[2]

Along with the growth of the community and the expansion of the zanja system, an unexpected and hazard-out problem developed. While water in the Los Angeles River was naturally pure and free from contamination, this was no longer true by the time most Angelenos drew their water from the zanjas. Almost all of the ditches and subservient canals were uncovered. Further, there were no bridges so that the zanjas were constantly forded by residents, travelers, teamsters and their wagons, as well as all sorts of animals. This introduced considerable pollution, but it was only part of the problem.

In defiance of city ordinances, it was common practice for residents to bath, launder clothes, wash animals, and dispose of refuse in the same zanjas from which the community drew its drinking water. Even the terror of a smallpox epidemic, which caused dozens of deaths in 1862-63, was insufficient to dissuade Angelenos

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[2]James M. Guinn, A History of California and an Extended History of Los Angeles (Los Angeles, 1915), p. 391; H. D. Barrows, "Water for Domestic Purposes versus Water for Irrigation," Publications of the Historical Society of Southern California, VIII (1911), 208; William H. Hall, Irrigation in California, Southern (Sacramento, 1886), p. 547.

from these habits.[3]

The zanjeros, the community's ditch tenders, struggled hard to enforce regulations against such customs, but with questionable success. When Angelenos were denied their dips in the zanjas, for example, some simply resorted to subterfuge: they dug pools on their own property and illegally diverted water from the adjacent canal. When the same water re-entered the zanja at a lower point, the owner of the pool had effectively contravened the intent of the "no swimming" ordinance.

Although the swimming pools contributed to the pollution of the community's water, they did have a humorous side as well in that they provided a means of entertainment for local pranksters. As nude bathing was a common custom, some families restricted their pools to their womenfolk on specified days. The privacy of the swimmers was generally ensured by a dense growth of willows around the pool, but the gay, sometimes shrill, feminine laughter would quickly alert neighborhood boys of the occasion. From along the zanja banks the boys would cut nettles and throw them into the water. Submerging a few inches below the surface, the nettles followed the current into the pool. The pranksters were soon rewarded

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[3]Harris Newmark, Sixty Years in Southern California, 1853-1913 (New York, 1926), p. 322; Semi-Weekly Southern News [Los Angeles], March 14, 1860.

by the startled shrieks of the swimmers which were good evidence that the nettles had encountered their bare targets.[4]

That a closed water system was needed to protect the community's domestic water against the pollution of men and animals was evident. One of the first men to perceive the need and propose a solution was William G. Dryden, Clerk of the City Council. In 1853 Dryden proposed to construct a distribution system that would pipe water directly to consumer homes. For payment Dryden requested a twenty-one year franchise on the system plus two square leagues of land. The city council rejected the offer, characterizing it as unnecessairly expensive; moreover, the council added, people had been drawing water directly from the zanjas for over seventy years, and it would be no hardship for them to continue to do so.[5]

In spite of the council's attitude, some Angelenos began receiving home delivery of drinking water in 1853 when the city's first water vendors began plying local streets. Charging fifty or more cents per week for their service, a few men peddled water door to door filling

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[4]J. Gregg Layne, "Early History of Los Angeles," Intake, XXIV, No. 12 (December, 1947), p. 4.

[5]City of Los Angeles, Clerk, City Council, Minutes, June 21, 1853; Boyle Workman, The City That Grew (Los Angeles, 1935), pp. 74-76.

ollas, the baked clay water jugs, that hung outside virtually every home in the city. Pushing a wheelbarrow with a water crock or using a horsedrawn wagon with a barrel, the "water man" was soon a common sight on Los Angeles streets. In describing one water peddler, a contemporary wrote: "His somewhat rickety vehicle, drawn by two superannuated horses, slowly conveyed the man and his barrel of about sixty gallons capacity from house to house."[6]

Finally in 1857 the council took steps to improve the city's system of water carts and open ditches by contracting for the construction of a domestic supply system. This franchise, which proved to be only the first in a long and disappointing series, was awarded to the persistent Dryden. With a partner, Patrick McFadden, Dryden incorporated the Los Angeles Water Works Company and laid the rudiments of the first enclosed distribution system in the history of Los Angeles.

According to his contract, Dryden was to furnish water from his own springs, the former Abila Springs, located north of town near the modern College and Alameda streets. Among the innovations Dryden introduced were a giant forty-foot water wheel placed in the zanja madre to furnish power to pump water from his springs into an

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[6]Newmark, p. 116

elevated flume.

The flume carried the water into a small reservoir Dryden erected in the center of the plaza. This first city reservoir was a twenty- by thirty-foot wooden tank capable of holding eight feet of water and elevated on a brick foundation to an overall height of eighteen feet. From this vantage, the water gravity-fed through the city's first underground mains which Dryden was authorized to run beneath city "streets, lanes, alleys, and roads" to customers' homes. The mains were made of straight pine logs brought from the San Bernardino Mountains and hollowed to a three-inch bore. Radiating out from the reservoir, the mains drained their contents into household cisterns.[7]

Although simple in design, the system was plagued by troubles and was in constant need of repair. Pine-log mains were weak and often ruptured even under nominal pressure; joints were imperfect and leaked despite generous caulking; and the resultant loss of water created mud bogs in the streets which annoyed residents. Trouble also came from the periodic winter floods that had carried away diversionary dams on the river since the founding of

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[7]J. J. Warner, An Illustrated History of Los Angeles County California (Chicago, 1889), p. 263; Newmark, p. 116; Los Angeles Department of Water and Power, From Pueblo to Metropolis: Water and Power in the Story of Los Angeles (Los Angeles, 1968), pp. 2-3.

the pueblo. In December 1861, a month-long deluge began which not only washed out the dam but destroyed the water wheel as well, forcing the rebuilding of both.

Discouraged, Dryden relinquished his franchise without having solved the city's domestic water supply problem. The council let subsequent contracts to such city builders as Jean L. Sainsevain, Damien Marchessault, and David W. Alexander who, along with numerous others, rebuilt and extended the supply system. The city itself attempted to operate the distribution system, building a new flume, water wheel, ditch and higher diversionary dam. But problems impartially stalked all contractors: winter rains and heavy spring freshets repeatedly destroyed the crude dams built to supply the systems; wooden mains persisted in leaking and soaking city streets; and, so, water carts were still needed to deliver potable water.

Then, in December 1867, a heavy flood again carried away a diversionary dam, and the city fathers despaired. In ten years none of the contractors had made any enduring improvements in the domestic water delivery system; and the city seemed no nearer a reliable method of supply than when the council had let the first contract to Dryden in 1857. Angelenos were dissatisfied, newspapers were critical of the situation, and the councilmen themselves were weary of a problem which seemed to defy solution.

This failure and frustration set the stage for the city to relinquish its valuable domestic water rights to private developers.

The Los Angeles City Water Company

In 1868 three successful local businessmen grasped the opportunity made possible by the despair: they were John S. Griffin, Solomon Lazard, and Prudent Beaudry. Griffin had come to Los Angeles in 1847 during the Mexican War as physician and surgeon with General Stephen Watts Kearny's army. He remained to enter business and professional life and soon amassed a considerable fortune. Lazard and Beaudry had arrived in the early fifties. Lazard became a prosperous merchant while Beaudry, who later served as mayor of Los Angeles, was one of the city's first ice merchants and was later successful in real estate development.

In May 1868, these enterprizers petitioned the city council for a fifty-year lease to the entire water system of Los Angeles for some $208,000 in compensation. When formally submitted to the council, however, their proposed contract had been skillfully drafted to amount to a quit claim deed to the city's water rights in the Los Angeles River; further, the contract even denied the city the authority to establish or control water rates.

This proposal was a complete break with past contracts in which the city had retained ownership of

water works and control of all water rights and rates. Nevertheless, the committee to which the contract was referred reported back to the council:

> We do not believe it advisable or prudent for the City to own property of this nature [water works] as it is well known by past experience that cities and towns can never manage enterprises of that nature as economically as individuals can, and besides, it is a continual source of annoyance . . . .[8]

Concluding that municipal ownership had failed, a majority of the council resolved to accept the lease-proposal and by a one-vote margin passed the necessary ordinance awarding the contract. The majority had not reckoned on the opposition of the mayor, however, who immediately vetoed the ordinance.

Mayor Antonio Aguilar had previously served as alcalde, or mayor, when Los Angeles was still a Mexican community. He had witnessed the growth of the area and the expansion of the zanjas, and he knew the priceless value of the water. In vetoing the measure he denounced the proposed alienation of the city's rights:

> It has always been considered by my predecessors, as well as myself at the present time, that the prosperity of the City of Los Angeles depends entirely upon the proper management and distribution of the waters of the Los Angeles River.
>
> First in magnitude, will be the supply of water for domestic use, properly managed to avoid waste;

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[8]James M. Guinn, Los Angeles and Environs (3 vols.; Los Angeles, 1915), I, 393-94.

> but I cannot conceive the necessity of a Sale of this water franchise, in order to Secure a supply for domestic use. This can be as fully accomplished under a Lease of the franchise, as well as by a sale thereof; or by the management of the Same by the City herself.[9]

Undaunted by this initial rebuff, Griffin and his associates submitted a new proposal, this time for a thirty-year lease. At the same council meeting, three other contractors submitted offers covering shorter periods and according the city more favorable terms. But in what one member described as "steamroller" tactics, the council rejected these proposals without benefit of hearing.[10] Even taxpayers were denied the opportunity to address the council in behalf of the measures.

The council president, John King, curtly dismissed the disgruntled taxpayers and announced he did not wish to hear any speeches from outsiders. Instead, King brought the thirty-year lease to an immediate vote, and by a margin of four to two, the council accepted. This time Mayor Aguilar reluctantly agreed to approve the enabling ordinance when the contract was amended to reserve the city's right to regulate water rates. This minor victory was all that clouded the fact that

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[9]City of Los Angeles, Clerk, Los Angeles City Archives, VI, 680, 684-85; Workman, pp. 85-86.

[10]Councilman Andrew A. Boyle. He accurately predicted the city would regret making its water system a private enterprise. Workman, pp. 87-88.

Los Angeles had relinquished its interests in its own water for a third of a century.[11]

According to this famous "Thirty-Year Lease," Griffin, Lazard, and Beaudry were given "the exclusive use, control, possession and management" of the city's water. Los Angeles could grant no other such lease during the thirty-year period nor could the city reduce water rates below the level of those rates then in force. The three developers were to pay the city an annual rental of $1,500; they were to construct reservoirs, replace all wooden mains with iron pipe, and make whatever other improvements were necessary to supply domestic water throughout the city; and they were to erect one fire hydrant at each corner where they ran their mains.[12]

Commencing operations, the partners incorporated the Los Angeles City Water Company which controlled domestic water supply in Los Angeles until 1902.[13] Despite an occasional reversal, as when a spring freshet carried

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[11]Guinn, Los Angeles and Environs, I, 393-94.

[12]City of Los Angeles, City Council, "An Ordinance Contracting for the Care, Maintenance and Improvement of the City Water Works," approved July 22, 1868, in William McPherson, Charter and Revised Ordinances of the City of Los Angeles (Los Angeles, 1873), p. 11.

[13]The city retained its right to deliver all irrigation water with one exception: the Canal and Reservoir Company was granted permission to furnish water from the river to lands not reached by the zanjas. The last zanja was not retired until 1904.

away a diversionary dam or destroyed a flume, the company experienced great success. When it took control of the water supply, the population of Los Angeles was approximately 4,500; the existing distribution system consisted of an antiquated water wheel, a crumbling diversionary dam, a diminutive reservoir, and two miles of wooden mains. By the time the company surrendered control, the population had climbed to nearly 120,000. To service the city, the company had constructed a reliable diversionary system, infiltration galleries beneath the river,[14] pumping plants, and six important reservoirs. To reach the sprawling population, over 300 miles of mains were installed. Originally, many of these mains were only two to four inches in diameter; as the demands for water mounted, some lines were repeatedly increased in size until they ranged up to forty-eight inches.[15] By 1902, the company had completely abandoned the original water works it had acquired and had laid the nucleus of the city's modern distribution system.

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[14]An infiltration gallery is a tunnel or large-diameter pipe driven beneath the bed of the river to intercept the subterranean flow of water.

[15]Los Angeles Times, December 1898; City of Los Angeles, Board of Water Commissioners, [First] Annual Report (Los Angeles, 1902), p. 4; William Mulholland, "A Brief Historical Sketch of the Growth of the Los Angeles City Water Department," Public Service, IV, No. 6 (June, 1920), pp. 2-3.

Its accomplishments notwithstanding, the company operation generated considerable public dissatisfaction and criticism. The small diameter of so many mains permitted only low hydrant pressure in certain areas, and affected customers complained of inconvenience and delay. The low pressure also caused anxiety among municipal authorities because it impaired fire-fighting ability.

Water rates and company profits were additional and more annoying sources of contention. Two years after it began operation, the company cozened the city council into reducing the $1,500 yearly rental fee stipulated in the lease to a mere $400. When the company did not reduce its charges proportionately, residents felt the rates as set in 1868 afforded the company an exorbitant profit on a public resource.[16] The few rates the company did reduce

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[16]The first water meter was installed in Los Angeles in 1889 at Charles Stein's Winery at Macy Street and Mission Road. With the exception of a few other large industrial users of water, meters were not commonly installed until the turn of the century. Costs for water were merely applied on a flat-rate basis according to the nature of the use. The following is excerpted from the monthly rate schedule in effect in Los Angeles in 1882:

"For tenements occupied by a single family of not more than five--one story $1.50--two story $2.00 and three story $2.50: When a tenement is occupied by more than one family there shall be charged fifty percent more than said rates for each additional family, and for each additional person over the five, 15¢ each; . . . for each water closet used in a private home, 25¢ . . . for water closets in public buildings, $2.00 . . . and for urinals, $1.00 . . . and for each bath tub used in barber shop, hotel or bathing establishment, $3.00 . . . . Hotels, taverns, boarding houses, boarding schools and lodging houses shall pay in addition to family rates, 15¢ for each bed boarder

were forced on it by the council only after considerable public outcry and demand.[17]

Another irritant was the complete monopoly the company established. In addition to its exclusive right granted in the lease to sell domestic water within Los Angeles, the company purchased neighboring water companies that had been organized to service areas outside the existing city limits. One of the more important of these firms, for example, was Henry Hazard's East Side Springs Water Company which supplied the Brooklyn Heights area. In addition, the company bought up sources of water supply such as artesian wells and springs. Its most significant purchase was Crystal Springs on the Los Feliz Rancho where Griffith Park was later located. By 1890, the company had bought out the last of its surrounding competitors and controlled every available water source in and around Los Angeles.[18]

Criticism of the "Water Company Ring" climaxed in the municipal election of 1896. The lease was due to

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or lodger in same. . . . All water furnished for sprinkling streets, flushing sewers, watering parks, or water used for extinguishing fires, shall be furnished free." City of Los Angeles, Clerk, City Council, Minutes, February 21, 1882; Los Angeles Times, February 11, 1882.

[17]Los Angeles Times, February 11, 1882, February 18, 1882, and February 19, 1882.

[18]Warner, pp. 265-66; Los Angeles Times, August 18, 1899.

expire in two years, and the company confidently expected the city to renew it. Critics of the company favored a return to municipal ownership and made that the major campaign issue. Proponents of city control denounced what they termed the company's excessive profits and argued that a municipal operation could supply water at ten percent of existing company rates.

Easily persuaded, the electorate returned candidates favoring city ownership; and on February 25, 1897, the city council notified the company of its intention to resume municipal operations:

> As you are well aware, the sentiment of the people is strongly crystallized upon the proposition of municipal ownership of a water system, and in obedience to this popular demand the present City Council feel it incumbent upon them to take immediate steps looking to the purchase . . . of the Los Angeles City Water Company by this municipality.[19]

The council asked the company to provide an inventory of its assets and to quote a selling price. While quickly listing the numerous properties which made up its water plant, such as buildings, head works, reservoirs, pumping stations, and mains, the company carefully refrained from stating a price. Not until July, after the council ordered the city engineer to appraise the properties, did the company furnish its quotation of $3,000,000. The city then quickly countered with an offer

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[19] Los Angeles City Archives, XLVIII, 267.

of $1,300,000. This offer the company promptly rejected, and, although the city made veiled threats to construct a new water system and completely bypass the company's works, negotiations stalled.[20]

As the last months of the lease ran out, statewide attention focused on the city's struggle to regain control of the domestic water system. Many were openly hostile to the concept of public ownership of such a utility. The San Francisco Call, for example, accused the Los Angeles City Council of conspiring to deceive its citizens by offering a high price for the company's works while secretly planning to accept $1,000,000 for a fifty-year extension of the water lease.[21]

This charge evolked an immediate and heated response from the Los Angeles Times. Under title of "Disgusting Mendacity," the editor wrote: "If any member of the City Council attempts to betray the interests of the people in this matter, he will find Los Angeles a seven-times hotter place than Hades!"[22]

The truth was much less dramatic. There was no conspiracy; the company was simply dragging its feet.

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[20] Ibid.; Los Angeles City Archives, L, 207; Los Angeles City Archives, LII, 21.

[21] San Francisco Call, January 20, 1898.

[22] Los Angeles Times, January 22, 1898.

Having established a profitable business, the company had no desire to lose it. From less than $20,000 in its first year of operation, the company had seen its annual earnings grow to nearly $425,000 by 1898.[23]

On July 21, 1898, with no price agreement in sight, the lease expired. As originally approved, it obligated the city to pay for all improvements the company had made during the thirty years. In the event of disagreement over the value of additions, the matter was to be settled by arbitration. So, by the end of October, a three-member board of arbitration had been selected: the city and the company each appointed one member and these first two arbitrators in turn selected the third as an impartial representative.[24]

For seven months the board investigated the waterworks to determine its market value: mains were excavated and examined to discover their condition; every parcel of the company's real property was appraised; and the testimony of numerous engineers was carefully evaluated.

Finally, on May 12, 1899, the board announced its long-awaited decision: it recommended a settlement price

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[23]Water Commissioners, [First] Annual Report, p. 4.

[24]The board was composed of James C. Kayes, city arbitrator, Charles T. Healey, company apointee, and George H. Mendell, engineer from San Francisco, impartial representative.

of $1,183,591.42.[25] As this amounted to less than the city's original offer, the company categorically rejected it. The company attorney, former United States Senator Stephen M. White, announced that the board's decision was not binding because it was not unanimous: the company's representative had signed with the qualification that the price was too low.[26] So, with the company still in possession of the waterworks and prepared to fight the board's decision in court, all negotiations halted.

The basic disagreement between the city and company centered on Crystal Springs, one of the company's primary sources of water. The company was demanding $1,000,000 for the springs, plus an additional $2,000,000 for the distribution system, and refused to sell the waterworks exclusive of the springs.

City officials contended that Los Angeles already owned the water rights to the springs because their flow was derived from the subterranean flow of the Los Angeles River, which they adjoined. The city maintained that it owned all appurtenant water rights to the river and to accede to the company's demand would mean paying

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[25] James F. Kenealy, Minutes of Proceedings of Board of Arbitrators, Los Angeles, 1898-1899, p. 32. [MS, Los Angeles Department of Water and Power.]

[26] Ibid.; Los Angeles Record, May 13, 1899. Healey favored the original company price of $3,000,000.

$1,000,000 for its own property. So, while the company refused to consider a sale of its waterworks apart from Crystal Springs, Los Angeles refused to consider a purchase of the system including the springs. On that stumbling block a settlement foundered.

It appeared the only means for resolving the deadlock was litigation, a recourse the city had hoped to avoid. Yet, the possibility of legal action diminished daily. In Sacramento a protracted courtroom struggle had just concluded that would pave the way to a compromise between the city and company.

For six years the city had been engaged in a legal battle for the subterranean flow of the Los Angeles River. In June, 1899, the California State Supreme Court upheld the city's claim: the court confirmed the city's right to condemn 315 acres of private property adjoining the river to permit the construction of an infiltration gallery to intercept the subsurface flow. In so doing, the court established the paramount right of Los Angeles to the entire flow of the river, both surface and subterranean.[27]

Armed with this decision and determined to fulfill its mandate to operate a domestic waterworks, the city council passed an ordinance authorizing the construction

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[27] Los Angeles v. Pomeroy, 124 Calif. 597 (1899).

of an entirely new distribution system.[28] At the same time the council addressed a conciliatory appeal to the water company urging it to appoint a committee to deal directly with the city to resolve the impasse: " . . . if expensive and long drawn out litigation can be averted and all differences settled on a fair, reasonable, and just, basis," the council wrote, " . . . the best interest of all concerned will thereby be conserved."[29]

Recognizing the importance of the court's decision, the company agreed "to enter into a compromise and settlement of all difficulties existing . . . ."[30] By July 1901, a compromise committee had reached an agreement acceptable to both sides. Los Angeles would pay $2,000,000 in full settlement for the entire waterworks, including Crystal Springs.

The arrangement was subject to the passage of a necessary bond issue which was placed before the city in a special election the following month. By a margin of nearly five to one, Angelenos resoundingly approved the bonds.[31] On February 4, 1902, nearly three years after

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[28] Los Angeles City Archives, LVI, 104.

[29] Los Angeles City Archives, LX, 594.

[30] Ibid., 611.

[31] The vote was 6,284 for; 1,267 against. City of Los Angeles, Clerk, City Council, Minutes, August 12, 1901.

the company's lease had expired, the City of Los Angeles again began operation of its own domestic water system.

The long struggle for control had stimulated a keen interest among Angelenos in municipal ownership of the water supply. To preclude a future alienation, the voters approved an amendment to the city charter in 1903 which forbade the city ever to lease or otherwise dispose of its rights in the Los Angeles River to any person or corporation without approval of two-thirds of the voters.[32]

Search for a New River

Los Angeles had no sooner resolved its differences with the water company than it encountered a far more serious and resistant problem--drought. Never a stranger to drought, the city had struggled since its founding to obtain sufficient water by recovering the full flow of the Los Angeles River and by establishing adjudicated rights to that full flow. At the turn of the century, circumstances changed so radically that the river's full flow was no longer adequate. To continue to meet its demands for water, the city was forced to turn to a new river.

Both human and natural phenomena were responsible for the altered conditions. The natural occurrence which determined many events that followed was the extreme fluctuation in California's annual rainfall. Existing

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[32]City of Los Angeles, Charter as Adopted January, 1889 and Amended January, 1903 (Los Angeles, 1903), p. 27.

records indicate that total annual runoff for the entire state has careened from highs of 130,000,000 to lows of 18,000,000 acre feet.[33] Such extremes can have crucial consequences in Southern California where total rainfall is only a fraction of that which falls in the northern portion of the state.

Los Angeles normally receives fifteen inches of rain during a season. On infrequent occasion, as in 1883-84, the city has waded through inundations of nearly thirty-eight inches. More frequently, the city has withered in droughts of five or less inches, as occurred in 1960-61.[34] In 1970-71, when only slightly over seven inches of rain fell in the Los Angeles Basin, the recently completed California Aqueduct delivered northern water which was credited with precluding famine conditions throughout much of the southern portion of the state.[35]

The necessity to rely on imported water during such periods illustrates the controlling key to local water systems in semiarid Southern California. The dry years are the determining factors in these systems; the years

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[33]An acre foot of water equals 325,850 gallons.

[34]Water Commissioners, [First] Annual Report, p. 16; Erwin Cooper, Aqueduct Empire (Glendale, 1968), pp. 25-27.

[35]Bookman-Edmonston Engineering Inc., Annual Survey Report on Ground Water Replenishment (Glendale, 1973), pp. 11-12.

of drought govern the ability of the systems to meet the demands placed on them by the users. In Southern California, the dry seasons, as well as the wet, generally occur in groups. In 1893-94, a dry period began and did not end until 1903-04. Although seasonal rainfall reached a high of 19.32 inches in 1902-03, it dropped to 7.06, 5.59, and 7.91 inches consecutively between 1897 and 1899. The eleven year period ended in a low of 8.72 inches. The overall seasonal average was only 11.24 inches, a total annual deficiency of 28.5 percent.[36]

This protracted drought had a pronounced effect on the flow of the Los Angeles River. The river originates in the San Fernando Valley and, during years of normal rainfall, usually appears first near the western end of the valley in the vicinity of the old Encino Rancho. The river is fed by the runoff from the surrounding mountains, most importantly the Santa Monica, Santa Susana, and San Gabriel. While the total drainage basin of the river is 502 square miles, practically all of the water crop is produced from 174 square miles of the San Gabriel Mountains. These mountains form the northern drainage boundary of the river, and in that area

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[36]City of Los Angeles, Department of Public Service, Complete Report on Construction of the Los Angeles Aqueduct (Los Angeles, 1916), plate 22; United States, Department of Agriculture, Weather Bureau, Climatic Summary of the United States (Washington, D. C., 1930), Section 18, pp. 3-5, 17, 18.

they rise to some 6,000 feet elevation.

Seasonal storm clouds coming inland from the Pacific Ocean pass lightly over the lower hills and mountains to the south and east of the San Fernando Valley and release the majority of their moisture as they climb over the San Gabriels. The runoff is garnered and fed into the river by a number of streams, principally the Pacoima, Little Tujunga, and Big Tujunga Creeks. Of the three, the Big Tujunga is the most important; it drains sixty-eight percent of the total mountain watershed tributary to the Los Angeles River.[37]

While rainfall absorbed on the valley floor also reaches the river through underground percolation, the major source of water is mountain runoff; and this crucial supply is not available until seasonal rainfall has exceeded ten inches.[38] Thus, as long as Los Angeles was dependent on the river for its water, the city faced the possibility of a shortage whenever seasonal rainfall was ten inches or less. When a series of deficient years occurred, as at the turn of the century, the city was in serious trouble.

That a water shortage did not necessarily follow a single year's subnormal rainfall is due to the peculiar

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[37]City of Los Angeles, Board of Water Commissioners, Third Annual Report (Los Angeles, [1904]), p. 37.

[38]Complete Report on Construction, p. 32.

structure of the San Fernando Valley. The valley is in reality an immense reservoir covering some 175 square miles and ranging up to several hundred feet in depth. Hydrologic engineers estimate this underground storage area is capable of holding as much as ten year's runoff from the mountains.

Over the geologic ages the valley has filled with porous alluvium eroded from the surrounding mountains and deposited on the floor by the winter floods. As runoff from the mountain watershed flows onto this granitic sand and gravel, it is quickly absorbed. The eastern portion of the valley, at the base of the San Gabriel Mountains, is especially porous and allows virtually no runoff to pass completely over the gravels. Only in unusually wet periods, such as January 1969 when 14.94 inches of rain fell on Los Angeles in one month, does surface runoff surpass the ability of the alluvium to absorb. In such rare instances, the floods discharge onto the Coastal Plain south of the city and are then lost into the Pacific Ocean.

Underlying the valley and forming the bottom of this huge subterranean lake is an impervious rock stratum. Sloping gently to the southeast, the valley floor pinches down to a width of about one mile between Glendale and Griffith Park; there the valley drains onto the flood plain to the south through an outlet known as the Narrows.

Even in dry years the river is often flowing at the Narrows. Reserves built up during wet seasons percolate slowly down slope through the valley alluvium. As the water gravitates eastward toward the Narrows, it is forced upward by the rising valley floor which, at the Narrows, approaches to within forty feet of the surface. It is this unusual characteristic which can produce a surface flow at the Narrows in dry years while further to the west the river bed will be parched. Similarly, this feature has caused engineers to label the Los Angeles an "upsidedown river."[39] More importantly, without this hidden natural reservoir there would be no Los Angeles River: winter rains simply would flow off to the ocean in great wasted floods within a few days of their falling.

Because the river is fed by the water stored in the detritus of the valley, it is imperative that the supply be replenished. If it is not, the river would eventually dry up even at the Narrows.[40] In the summer

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[39]William Mulholland, Superintendent of the Los Angeles City Water Department, reportedly first applied this epithet. City of Los Angeles, Department of Water and Power, Bureau of Water Works and Supply, The Water Miracle (Los Angeles, 1936). (Unpaginated pamphlet.)

[40]Complete Report on Construction, p. 32; Water Commissioners, [First] Annual Report, pp. 13, 16, 19. It is noteworthy that the river does not immediately respond to a single wet year any more than it does to a single dry year. When, in 1901, following three dry years, rainfall rose to 16.29 inches, the flow of the river continued to decline. Ibid., p. 27.

of 1904 the possibility of such a crisis appeared imminent. From its normal summer flow of approximately 52,000,000 gallons daily, the yield dipped to 27,650,000 gallons. Then on September 7 it shrank further to 25,943,000 gallons. This was over six percent below the river's mean daily flow even for that dry year and was an all-time recorded low.[41]

At the same time the bottom seemed to be dropping out of the river, the population of Los Angeles was expanding by virtually geometric proportions. In 1876, when the Southern Pacific Railroad, the nation's first transcontinental, reached Los Angeles, the city's population was less than 6,000. The resulting ease of transportation facilitated a growth to some 11,000 by 1880.

In 1887, a second transcontinental, the Santa Fe, completed its own roadbed into Los Angeles. In a struggle for access to the Central Valley, the Santa Fe triggered a rate war with its rival. Fares from St. Louis to Los Angeles plumeted from $125 to as little as one dollar.

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[41] City of Los Angeles, Board of Public Service Commissioners, Tenth Annual Report (Los Angeles, 1911), p. 10.

Meteorological observations were not begun in the Los Angeles area until 1876, and systematic observations of runoff at an even later date. Because of this limited data, Mulholland felt there was some reason to believe that in the long run the river's flow might not have been at an exceptionally low point. Water Commissioners, Third Annual Report, p. 26.

While the rates did not remain so ridiculously low for long, they did stay below twenty-five dollars for over one year.[42] The famous Boom of the Eighties was on, and the population explosion in Los Angeles had begun!

New families arrived by the tens of thousands. By 1890, they had pushed the city's population to over 50,000. Even when the boom ended and the drought began, the growth continued. By 1900, the city had 102,000 residents. During the next four years, coinciding with the height of the drought, the city again doubled, numbering 200,000 by 1904. And they all used tremendous quantities of water.

Ironically, for a city in semiarid country where water is naturally scarce, Los Angeles had the highest per capita water consumption rate of any city in the nation. In 1901 Angelenos used a calculated daily average of 306 gallons. Had this rate of use continued, in conjunction with the city's mushrooming growth, demand would have outstripped the river's supply by nearly 7,000,000 gallons daily as early as 1903--one full year before the peak of the drought.

To help prevent such a calamity, the city began installing meters soon after securing control of the

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[42]Glen Dumke, The Boom of the Eighties (Los Angeles, 1944), pp. 24-25.

water system. By making it possible for the city to charge customers for the actual amount of water they used, the meters helped discourage waste and reduce consumption to a daily average of 190 gallons by 1903. Combined with urgent appeals for conservation, the city survived the summer of 1903.[43]

But as the grip of the drought continued to tighten, the city was forced into a frantic quest for more water. Engineers installed additional infiltration galleries beneath the Narrows--one, 2,000 feet in length--to intercept every possible drop of the river's subsurface flow. New wells were drilled south of the Narrows to recover any flow that might have escaped the collection galleries. The city initiated legal action to stop some 200 San Fernando Valley farmers from irrigating their fields with water they pumped from wells sunk in the valley's underground reservoir. The city insisted that the water be permitted to percolate to the infiltration galleries. And in a last ditch effort, Los Angeles halted all irrigation within its own limits; orchards and fields withered as owners surrendered water rights held over a century so that all water could be used for domestic necessities.

Despite all these measures, demand nearly exceeded

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[43]Water Commissioners, [First] Annual Report, p. 29; City of Los Angeles, Board of Water Commissioners, Fourth Annual Report (Los Angeles, [1905]), p. 25.

supply amidst the withering heat of the summer of 1904. During one ten-day period, which began on July 20, the average daily flow into the city reservoirs dropped to 35,782,000 gallons while consumption rose to 39,276,000 gallons daily--a net loss in reserves of 3,494,000 gallons daily. On July 30, city officials announced that reservoirs were half empty. Only desperate appeals to the public for economy coupled with a moderation in the temperature brought down consumption to 33,000,000 gallons daily, a point at which reservoirs could be replenished.[44]

The crisis passed; and during the winter of 1904-05, rainfall jumped to 19.35 inches, some twenty-three percent above normal. This abundance and the continued installation of meters helped keep city use several million gallons below the daily yield of the river. But the implications of the drought were inescapably clear to city officials: more water had to be found. The light rainfall of the Los Angeles area was simply not capable of meeting the demands of so many residents. Where, for example, New York City received nearly 300,000,000 gallons daily from a 320 square mile drainage area, Los Angeles received only 52,000,000 gallons from

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[44]Water Commissioners, Third Annual Report, pp. 23-24. Rights in the San Fernando Valley were surrendered only after extensive litigation. Most importantly, see Los Angeles v. Pomeroy, 124 Calif. 597 (1899).

a watershed of 502 square miles--only seventeen percent as much water from an area over fifty percent greater in size. And even this amount of runoff may have been unreliably optimistic in the long run.

The United States Geological Survey had been gauging the daily runoff of the Los Angeles River watershed for several years. Based on their findings, engineers concluded that the reliable yield of the dry controlling years could not safely be expected to exceed forty-five to fifty million gallons daily. This meant that if Los Angeles were to continue to grow, it would be necessary to supplement the flow of the river. William Mulholland, Superintendent of the Water Department and twenty-seven year veteran of the city's water problems, recommended to the Board of Water Commissioners that the time had come to find an additional source of water. The Board's obvious question was, what source?[45]

Wells that had been bored during the drought to extract additional ground water had produced mixed results. Pumping within the San Fernando Valley basin had diminished the flow of the Los Angeles River at the Narrows by the exact amount withdrawn at the wells. Pumping from the coastal basin, south of the Narrows,

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[45]Water Commissioners, Fourth Annual Report, p. 17. Water Commissioners, Third Annual Report, p. 23; Complete Report on Construction, p. 35.

bolstered the city's total supply but at the expense of accelerating the already rapidly falling water table in the basin.

The coastal basin is a broad flood plain covering some 775 square miles. It extends from Aliso Creek, just south of Laguna Beach, to the Santa Monica Mountains in the northwest; and it runs inland from the ocean to the Santa Ana Mountains and the Puente Hills. In 1900, numerous communities and irrigation developments depended almost exclusively upon the ground water in this huge basin to meet their own rising needs. By the end of the drought, these combined interests had drilled over 8,000 wells throughout the basin representing an investment of nearly $2,500,000 and, more importantly, the beginning of a dangerous overdrafting of the underlying aquifers. By withdrawing the ground water faster than nature could replace it, the basin was eventually so depleted that the waters of the Pacific Ocean were able to intrude into this valuable fresh-water reserve.[46]

Little appreciated before the turn of the century, the significance of ground-water supply in Southern California was gradually being revealed primarily through the investigation of W. C. Mendenhall. A geologist with

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[46]Hydrologic engineers describe this condition as a drop in the piezometric pressure of the fresh-water basin below that of the adjoining sea level. This permits the salt water to invade the fresh-water aquifers.

the U. S. Geological Survey, Mendenhall discovered a marked and widespread drop in the water table from the combined results of over development and deficient rainfall. In some instances he found the level in wells had dropped as much as sixty-five feet between 1898 and 1904. In the valleys south of the San Gabriel Mountains, the area in which artesian wells were active had shrunk from 375 square miles to 250 square miles during these years. The famous Bouton Well, near Bixby in present-day North Long Beach, which had yielded nearly 4,000,000 gallons daily when bored in 1899, had dwindled to only 823,000 gallons daily--an eighty percent drop--by May, 1903.[47]

Despite this and other direct evidence of ground water depletion, critics of Los Angeles later charged that the city could have developed the subterranean water supply as a supplemental source.[48] Yet, the city's experience dictated that any additional wells would have to be drilled in the coastal plain. This basin was replenished with mountain runoff carried primarily by the Los Angeles, San Gabriel, and Santa Ana Rivers. As early as

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[47]Water Commissioners, Fourth Annual Report, pp. 22-23, 48-59; City of Los Angeles, Department of Public Works, Los Angeles Aqueduct, First Annual Report (Los Angeles, 1907), pp. 69-74.

[48]This is one of many captious criticisms found in, City of Los Angeles, Aqueduct Investigation Board, Report of the Aqueduct Investigation Board to the City Council of Los Angeles (Los Angeles, 1912). See the testimony of F. C. Fickle, pp. 88-89.

1904, these three rivers were almost totally diverted and utilized by municipal and agricultural interests. In addition, as a result of the prolonged drought and extensive pumping, the saturation level of the plain had dropped from twenty-three to fifty-one feet below the surface. Mendenhall concluded that the basin was already seriously overdeveloped. He informed officials of the Los Angeles Water Department that the region could not safely provide appreciable amounts of additional water; and he strongly urged that the city look elsewhere for a supplemental supply.

Los Angeles followed Mendenhall's advice; and, despite the captious harping of critics, within fifty years its decision to look further afield was forcefully vindicated. Other communities and irrigators continued to pump the basin waters faster than nature could replace them. By 1935 this overdrafting had so depleted the reserves that salt water from the Pacific Ocean had penetrated nearly one mile inland in the vicinity of Manhattan Beach where fresh water wells began to produce sea water. Engineers of the Los Angeles County Flood Control District estimated that the heavy extractions were permitting Pacific waters to forge inland at 500 feet yearly. Although the danger of the situation was apparent, the overdrafting continued and by 1946 exceeded the ability of nature to replenish the basin by 40,000

to 53,000 acre feet each year.[49]

To halt the intrusion and widespread contamination of the underground aquifers, the Flood Control District was forced to initiate expensive fresh-water barrier projects. District engineers drilled wells along the coastal perimeter in the affected areas from the Orange County line to Playa del Rey. Then, under high pressure, fresh chlorinated water was forced through the injection wells into the ground to form pressure mounds to keep out the sea water. Each month up to 3,759 acre feet of water were pumped into the three barrier projects constructed in Los Angeles County.[50] By 1973, a total of one-half

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[49] C. Charles Evans, Randall R. McIlwain, William T. Pitts, West Coast Basin Barrier Project 1967-1969 (Los Angeles, 1970), Appendix I, pp. 1-3.

[50] The three barrier projects are: the West Coast Basin Barrier which extends from Pacific Coast Highway at Palos Verdes Hills to Imperial Highway in Inglewood; the Dominguez Gap Barrier which extends from the Harbor Freeway in San Pedro to Willow Boulevard along the Dominguez Channel in Long Beach; and the Alamitos Barrier behind Alamitos Bay and Marine Stadium along the Los Angeles-Orange County line toward Garden Grove Boulevard. Bookman-Edmonston Engineering, Inc., Annual Survey Report on Ground Water Replenishment (Glendale, 1973), plates 2, 3, 4. (Unpaginated.)

Intruding seawater invades overdrafted fresh water basins which lie below sea level. The intrusion usually occurs at or near the mouth of an ancient river channel cut millions of years ago and now covered over with alluvium. Much of the coastal plain in the greater Los Angeles area is composed of alluvium deposited by the rivers. Over the geologic ages the rivers have changed their beds repeatedly in building up the plain. As a consequence, the coast line is pock-marked with vulnerable avenues for salt water intrusion.

Orange County, where salt water has intruded up

million acre feet of fresh water had been injected into the county's coast line in the continuing effort to protect the great interior storage basin.[51]

The earliest and most extensive injection barrier in Los Angeles County was the West Coast Basin Barrier Project which extended nine miles from the Palos Verdes Hills northwest to the Los Angeles International Airport. In this project there were ninety-four twelve-inch operational fresh water injection wells. The costs of construction and operation for this one barrier alone totaled nearly eighteen and one-half million dollars from its inception in 1951 through 1969.[52]

The City of Los Angeles, meanwhile, following Mendenhall's admonition, searched elsewhere for supplemental water. The Board of Water Commissioners authorized Mulholland and Joseph B. Lippincott to investigate a wide range of neighboring watersheds in Southern California. For the preceeding ten years. Lippincott had been studying

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to six miles inland, also has a barrier project with twenty-three injection wells. Orange County was pumping some 30,000,000 gallons of water daily into its injection barrier system. Larry Buxton, "Water Factory 21," Western City, XLIX, No. 11 (November, 1973), p. 26.

[51]Bookman-Edmonston Engineering Inc., pp. 34-35. The District purchases the water from the Metropolitan Water District.

[52]Evans, McIlwain, Pitts, Appendix I, p. 22. The exact cost was $18,424,631.32.

water supply in Southern California for the U. S. Geological Survey; so he, as well as Mulholland, was thoroughly acquainted with the region's water problems.

The search carried the two engineers as far as Piru Creek in Ventura County in the west, the Kern River in Kern County in the north, the Santa Ana River in Orange County in the south, and the Mojave River in San Bernardino County in the east.[53] Subsequent investigators even considered the San Luis Rey River emptying into the Pacific at Oceanside in San Diego County to the south.[54]

Supplemented by data from the U. S. Geological Survey and other studies, the investigation showed that some watersheds, like Piru Creek, had insufficient runoff to furnish water for even "one ward" of Los Angeles, as Mulholland phrased it. Others, like the Mojave River, could have furnished a temporary supply for four or five years at the city's existing rate of growth. Impounding the Mojave, however, would have presented a major water-loss problem because of the desert's extremely high evaporation rate. As a result of this loss, which exceeded seven feet per year, the city could have counted safely

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[53]Findings contained in Water Commissioners, Fourth Annual Report, p. 17 et, passim.

[54]See report of Edward Johnson and Edward S. Cobb, in Aqueduct Investigation Board, Report, p. 34.

on only one-half the Mojave's flow.[55]

In 1905, Los Angeles was not interested in temporary expedients or half-measures. Growth was equated with progress; major ecological problems were still a half-century distant; and Los Angeles was seeking a water supply that would permit it to grow to one or two million people.[56] The Kern River, 135 miles to the north, might

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[55]In later years the Bureau of Reclamation would be forced to grapple with the problem of evaporation. At Lake Mead, behind Hoover Dam, for example, the top six feet of water are lost each year. Total yearly losses from the Bureau's major reservoirs in the arid West exceed 25,000,000 acre feet--some one-third of the total water impounded. To reduce the losses, the Bureau has experimented with such chemicals as hexadecanol, a low-cost alcohol, which forms a film on the water's surface one millionth of an inch thick and retards evaporation. W. Eugene Hollon, The Great American Desert, Then and Now (New York, 1966), p. 244.

[56]Predictions of growth were euphoric and somewhat sobering in retrospect. Water was expected to make possible a "Greater Los Angeles" stretching from the mountains to the sea and from the San Gabriel River to the Santa Susana Mountains. This area would be filled with two million of the happiest and most prosperous people history had ever seen. It was predicted that more people would live within thirty miles of Los Angeles city hall than then lived in all of California and under conditions more nearly ideal than those existing in any other community of similiar size on earth. See Charles A. Moody, "Los Angeles and the Owens River," Out West, XXIII, No. 4 (October, 1905), pp. 439-42.

In 1905, California's population was approaching two million (1,486,000 in 1900, and 2,378,000 in 1910). The population of Los Angeles was estimated at some 200,000. The 1970 census revealed that the City of Los Angeles numbered 2,816,061. In the greater metropolitan area of Los Angeles-Long Beach, or, one might say, within a thirty-mile area, there were over seven million people--approximately three times the state's population in 1905.

have provided such a supply had its ordinary flow not already been appropriated for irrigation in the San Joaquin Valley. Closer to Los Angeles, the San Gabriel and Santa Ana Rivers were also possible sources. Yet, they too, except for winter floods, were diverted to supply nearby communities or to irrigate tens of thousands of rich agricultural acres.[57] Los Angeles could have acquired the necessary water rights to these local rivers through condemnation and litigation actions; but two powerful considerations dissuaded the city from this approach.

First, these Southern California rivers were subject to the same weather conditions as was the Los Angeles River: drought hit them with equal severity and made them similarly unreliable. Second, and more importantly, to have appropriated these watersheds would have denied them either to those already using the water or to those who would use the water as the Los Angeles hinterland grew. The Los Angeles City Water Department took the position that the economy of the greater Los Angeles area was interrelated and that the city should foster and promote surrounding communities.

In determining the availability of virtually each

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[57]The importance of agriculture in Los Angeles County is illustrated by its foremost position in the nation from 1910 to 1950.

Southern California river, this latter overriding consideration caused Los Angeles to turn elsewhere for water. It was a position of lasting significance that has been ignored by the critics of the city. In 1905 Los Angeles was not seeking to appropriate or condemn existing water rights; the city was looking for surplus waters. Only unforseen events of the 1920's altered this approach.

That a sufficient or readily available water supply to meet its anticipated needs was not locally obtainable gave the city two alternatives: it could curb its growth, an unthinkable recourse in 1905; or it could search for a more distant source. When former Los Angeles mayor, Frederick B. Eaton, suggested that surplus water was available from the Owens River, 240 miles to the north, Los Angeles turned its attention in that direction--toward a new watershed, a new river, and a new struggle.

Chapter II

The Owens River

The Great Basin Desert of the American West sprawls over thousands of square miles of Utah, Nevada, Arizona, and California. On the western edge of this arid land, just 240 miles north of Los Angeles, lies a geologic wonder of the West, California's famed Owens River Valley. Like an immense hammock suspended from the fourteen-thousand foot peaks of the Sierra Nevada and Inyo-White Mountains, the Owens drops 11,000 feet to become America's deepest valley.[1] Geologists have studied the structure of this long narrow defile with

Ironically, like the Great Basin Desert of which it is a part, the Owens Valley is a land of little rain.[3] Hidden in the rainshadow of the towering Sierra Nevada, the valley receives only six inches of rain annually at Bishop in the north and a mere three inches at Keeler in the south.[4] Summers are hot and dry; winters are cool and also dry. Withal it is an unlikely source of surplus water. Yet, within sight of the valley floor, protected below the crest of the Sierra, lie perennial glaciers and snow fields that produce life-giving water for an otherwise parched valley below.

The southern Sierra Nevada normally receives from thirty to forty inches of precipitation annually. A small portion of this arrives as thundershowers produced by the low pressure storms of summer coming in from the North Pacific or by the Sonoras of fall drifting north from the Gulf of California. The bulk of precipitation, however,

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of Water and Power (Los Angeles, 1926); Willie A. Chalfant, The Story of Inyo (2nd ed., Bishop, California, 1933); Robert Glass Cleland, California in Our Time: 1900-1940 (New York, 1947); and, Vincent Ostrom, Water and Politics: A Study of Water Policies and Administration in the Development of Los Angeles (Los Angeles, 1953).

[3]The most famous use of this phrase is, Mary Austin, Land of Little Rain (Boston, 1903).

[4]U. S., Department of Agriculture, Weather Bureau, Climatological Division, Climatic Summary of the United States (Washington, D. C., 1930), Section 18.

and that which became the life-blood of Los Angeles and thereby focused public attention on the Owens River, is a product of winter.

Beginning in late October and early November, heavily laden storm clouds which ultimately feed the Owens River sweep south from the Gulf of Alaska. Before these storms can deliver any moisture to the Owens watershed, they must travel 200 miles inland and surmount two major orographic barriers. On striking the California coast, the storms first are intercepted by the Coastal Ranges which rise to 7,000 foot elevations and run virtually the entire length of the state. Forty-one percent of California's total annual runoff is extracted by these ranges in the area north of San Francisco. That one hundred inches of rainfall is commonplace in this region is mute testimony to the impact of the barrier.[5]

Escaping moisture then passes over the relatively dry Central Valley only to confront a second barrier, the Sierra Nevada. There the air masses drop most of their remaining content as they are forced up the long western slope of the California Backwall. The small portion of moisture that is carried past the crest and deposited on the precipituous east slope becomes the source of the

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[5]Robert W. Durrenberger, Patterns on the Land (Woodland Hills, California, 1965), pp. 8-12.

Owens River below.

The largest portion of this moisture arrives as snow with January the month of heaviest fall. The southern Sierra Nevada is one of the snowiest regions in the world, and, by spring, when the snow pack has reached its maximum depth, it frequently exceeds twenty-five feet.[6] In the biting cold of Sierra heights, it is usually preserved over six months. Many summers have found such passes as the nearly ten thousand foot Sonora and Tioga choked with snow as late as June and early July. In areas where the winds sweep snow into crevasses and pockets on the protected east slope, glaciers and snow banks are perennial. Here are hidden the southernmost glaciers in the United States.[7]

The snow pack is the overriding key to the Owens River. Through settling, thawing, and refreezing, the

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[6] Ibid., p. 12

[7] David R. Brower, "Winter Sports," The Sierra Nevada: The Range of Light, ed. Roderick Peattie (New York, 1947), pp. 224-29; Adolph Knopf, A Geologic Reconnaissance of the Inyo Range and the Eastern Slope of the Sierra Nevada, California (Washington, D. C., 1918), p. 96; Paul Bateman, "Geology," in Schumacher, Deepest Valley, p. 108.

There are approximately sixty glaciers in the Sierra, some as low as 5,000 feet elevation. The largest is Palisade Glacier, about three-quarters of a square mile in area. While Palisade is often referred to as the southernmost in the United States, there are a few smaller glaciers along the Sierra crest as much as ten miles further south. Bateman, Deepest Valley, p. 108.

snow is transformed into durable ice. Then, as the warmth of spring and summer creeps up the Sierra, the pack slowly melts releasing its vast amount of stored water. Sheltered from the heat of the sun on the Sierra's east face, the gradual thawing of the deep ice and snow can keep the streams full until late summer.

The high mountain lakes also contribute to the flow. During the long winter freeze, they lock up large amounts of water as ice. In the wake of the spring thaw, the ice melts, lower lakes wasting away first. Having released their surplus, the lower lakes then serve as regulating reservoirs for the melting flows from above. Located on most of the important forty-plus streams and creeks feeding the Owens, these lakes form an important natural flood control system. When a sudden onslaught of summer's heat accelerates the thaw or spring rains multiply the runoff, the lakes help prevent serious flooding by slowing the plunge of waters into the deep valley.

Over 3,300 square miles of watershed lie within the Owens River Valley; yet, virtually the entire river's flow is derived from only 536 square miles of the Sierra Nevada. The neighboring Inyo-White Mountains, only forty miles across the valley, although stretching 14,426 feet into the upper cold air, are almost totally eclipsed by the expansive rain-shadow cast by the Sierra. As a result, their 1,200 square miles of tributary watershed contribute

virtually no runoff to the Owens River.

The Owens River Valley

Despite its singular dependence on Sierra runoff, the river's flow is remarkably constant in years of normal rainfall.[8] Structurally the Owens Valley is similiar to the San Fernando Valley to the south--an enormous underground reservoir filled with porous alluvium from the surrounding mountains. The percolation of water through this detritus augments, and thereby helps regulate, the surface flow. In the same sense that engineers termed the Los Angeles River upside down, the Owens River is upside down. One marked difference denotes the two valleys and two rivers, however: whereas the San Fernando Valley empties at the Narrows permitting the Los Angeles River to flow onto the Coastal Plain and thence to the Pacific Ocean, the Owens Valley provides no outlet. Apart from evaporation, no water flowing in the Owens River is thought ever to have reached an ocean. The river is landlocked.

Geologically the Owens Valley is a long narrow block of granite that has dropped thousands of feet along a fault line in the earth's crust. Approximately one and one-half to two million years ago, during the Pliocene

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[8]Man, of course, has altered nature's regimen both by diverting the river and by deep pumping from the valley alluvium.

Period, there was an exceptional amount of movement in the earth's crust. At that time the Sierra Nevada, a 400 mile-long block of solid granite, was uplifted while the adjoining Owens Valley subsided. Although there are many well known faults in California, most of them, such as the infamous San Andreas and Garlock faults, have produced lateral movement. In the Owens Valley the movement was vertical. Total displacement in the latitude of Mount Whitney, between the mountain summit and the bedrock floor of the valley, is estimated at 19,000 feet. This places the floor over three-quarters of a mile below sea level. Impressive as this differential is, displacement is even more incredible in adjoining areas. In upstream Long Valley and Mono Basin, total vertical displacement may amount to 24,000 feet from the Sierra crest to the eternally buried valley floor.

Geologists think the subterranean bedrock is widely fractured; yet evidence indicates the basin is none the less watertight. Thus, as in the San Fernando Valley, the impervious granite lining the floor of the Owens Valley encloses an immense subterranean lake. The basin is open to percolating water from adjoining northern areas, such as Long Valley, but it is closed to percolation at its southern end by pinched bedrock forming an inescapable catch basin. Engineers estimate this huge underground lake can contain at least 37,000,000 acre feet

of water.[9] When compared to Lake Mead behind Hoover Dam, which at Maximum capacity impounds 35,000,000 acre feet of the Colorado River, the tremendous water storage capacity of this subterranean reservoir is apparent.

The errosive action of winds, streams, and glaciers has covered the valley floor with thousands of feet of porous granitic sand and gravel ranging in size from the microscopic to boulders thirty feet in diameter. Erosion of the Inyo-Whites has contributed to the fell; but, as with the water supply, the greatest portion has wasted from the Sierra. Where its swift streams debouch onto the valley, steep alluvial fans continue to grow, shrouding the base of the stark granite Backwall.[10]

As the streams tumble over the porous materials, much of the flow is absorbed and percolates downward into the subterranean lake. Remaining flow has only a short run into the river itself which hugs the western edge of the valley close to its principal source. Here surface flow is augmented by the percolation down the alluvial fans and through the valley detritus. With no outlet for the valley, the water table can be high, even

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[9]Pakiser, et. al., pp. 54-55; Bateman, Deepest Valley, pp. 101-06; Francois E. Matthes, "A Geologist's View," in Peattie, The Sierra Nevada, pp. 172-85, 196-202.

[10]For the importance of glacial action in creating the alluvial fill, see Arthur C. Trowbridge, "The Terrestrial Deposits of Owens Valley, California," Journal of Geology, XIX, No. 8 (December, 1911), 707-47.

surfacing in places to permit swamp and marsh grass to grow.

The river winds south with the gentle fall of the valley. From an elevation of 4,300 feet in the north, the valley drops to 3,600 feet eighty miles to the south, approximately five and one-half feet per mile. At the southern end the river empties into land-locked Owens Lake. Some 50,000 years ago the river tumbled on south into Death Valley. Enroute it formed a lake in the Mojave Desert twice the size of present-day Lake Tahoe. During intervening ages, faulting and volcanic action sealed off the passage and turned the ninety-six square mile Owens Lake into the river's terminus.

With the only escape by evaporation, the lake in time became an alkaline sump. Its salt content approached 250 tons per acre foot of water.[11] That commercial interests would one day remove 1,000,000 tons of valuable mineral salts from the lake bed was undreamed of in 1900.

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[11]Charles A. Moody, "Los Angeles and the Owens River," Out West, XXIII, No. 4 (October, 1904), p. 431. By way of contrast, the earth's oceans contain 47.8 tons of salt per acre foot of water, California's Salton Sea contains fifty-plus tons, Great Salt Lake 260-plus tons, and the Dead Sea 300-plus tons. Like other dead bodies of water, the salinity of Owens Lake continuously increased as the lake lost seven feet of water each year through evaporation. City of Los Angeles, Department of Public Works, Los Angeles Aqueduct [William Mulholland], First Annual Report of the Chief Engineer of the Los Angeles Aqueduct to the Board of Public Works (Los Angeles, 1907), p. 33.

The river still emptied into Owens Lake, and the nine foot mineral deposit was covered by thirty feet of water. Only rerouting the river would expose the thick crust.[12]

Even in 1900 the entire flow of the river did not reach the lake, however; portions watered valley farms. Earliest known diversions had been made by the Paiute Indians, first occupants of the valley. Seasonally, the Paiutes constructed earthern dams across Bishop Creek directing its flow onto their nearby fields. At harvest time they removed the dam and the creek once again joined the river.[13]

Systematic diversion of the river did not begin until the arrival of American homesteaders in the 1860's and 1870's. Neighboring discoveries of precious metals, such as the silver deposit at the fabulous Cero Gordo Mine, provided local markets for the settlers who were

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[12]Pakiser, et. al., pp. 5, 10; Bateman, Deepest Valley, pp. 115-16; see also Charles H. Lee, An Intensive Study of the Water Resources of a Part of the Owens Valley, California (Washington, D. C., 1912). This is Geological Survey Water Supply Paper 294. A synopsis of this study is printed in City of Los Angeles, Department of Public Service, Complete Report on Construction of the Los Angeles Aqueduct, Appendix A, pp. 276-91.

[13]It is commonly thought that the Yuma Indians, living along the Colorado River, were the only California group to practice irrigated agriculture. Evidence indicates that, while much less sophisticated, the Paiutes also engaged in simple irrigation. See Julian H. Steward, "Ethnography of the Owens Valley Paiute," University of California Publications in American Archaeology and Ethnology, XXXIII, No. 3 (1933), pp. 333-43.

quick to furnish the miners with beef and a few other staples. Valley crops included corn, wheat, barley, fruits, vegetables, alfalfa, and other hays. Production was concentrated in the north end of the valley in the vicinity of Bishop, Laws, and Big Pine--the same area in which the Paiutes had irrigated. There, along the streams and river bottom, water was most easily obtained and the soil was best. Gradually the farmers brought over 30,000 acres into production.[14]

To irrigate this acreage, fifteen unlined canals and ditches connected farms with the river: McNally Ditch, for example, delivered water to the Laws area; Bishop Creek Canal served the Bishop locale; Owens River Canal met the needs of the north and west valley, and, Big Pine Canal supplied the demands of Big Pine. These and other canals accounted for 110 miles of primary and secondary ditches lacing the north valley area.[15] Unfortunately, they all drew directly from the river; the farmers built no holding or storage facility. In years of normal rainfall, the irrigating season extended from April to October. By late summer, when surface flow had

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[14]U. S., Department of the Interior, United States Geological Survey, Third Annual Report of the Reclamation Service, 1903-04 (Washington, D. C., 1905), p. 64.

[15]Ruth E. Baugh, "Land Use Changes in the Bishop Area of Owens Valley, California," Economic Geography, XIII, No. 1 (January, 1937), p. 23.

dwindled, there was no longer sufficient water to supply all ditches. Then the farmers allotted the river on a proportionate basis. In dry years there was virtually no irrigation.[16]

The need for a dam to impound the river was only one of many problems the settlers faced. Nature confronted them with more constraining obstacles in the location and structure of the valley itself. At over 4,000 feet elevation, the average frost-free growing season of the north valley was only 150 days.[17] This seriously restricted the variety and quantity of crops that could be raised.

The watertight nature of the valley floor also impaired production. That the valley farms were located over a gigantic underground lake was not then known; but, the presence of the water slowed surface drainage and aggravated the poor irrigation practices of the farmers. The early settlers had not installed head gates or other regulating devices on their ditches. During periods of normal rainfall, the absence of control mechanisms permitted the river to flow constantly onto the cultivated fields. When combined with impaired drainage, constant seepage from unlined ditches, and percolation of normal

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[16]Chalfant, p. 338.

[17]Baugh, "Land Use Changes in the Bishop Area," XIII, No. 1, p. 32.

Sierra runoff, the unrestrained irrigation would overwhelm the ability of the valley detritus to drain. As the water table rose, large areas were converted into marshes similiar to the natural bogs found further south in the valley. As a result, entire areas had to be taken out of production, and as early as 1870 a local newspaper reported that many cellars in the Independence area were actually flooded.[18]

As if these were not sufficient problems, nature added yet another to plague the farmers--heavy concentrations of alkali in the soil. In many areas of the valley, alkali appeared in such large quantities that numerous crops could not be grown even when unaffected by the shortened growing season.[19]

These disparate problems forced valley residents to concentrate on livestock production. During summer months farmers drove their herds onto national forest lands, returning them to pasture in the valley during winter. Hay became the dominant crop.[20] In 1920, before

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[18] Inyo Independent, August 8, 1870.

[19] U. S., Department of the Interior, United States Geological Survey, Second Annual Report of the Reclamation Service, 1902-03, (Washington E. C., 1904), p. 95; U. S., Department of Agriculture, Bureau of Chemistry and Soils, Soil Survey of the Bishop Area, California (Washington, D. C., 1928), p. 94.

[20] Soil Survey of the Bishop Area, p. 66.

the agricultural depression of that decade engulged the nation, the total value of valley crops was $1,503,195. Farmers received well over two-thirds of that total for hay and forage, illustrating the overriding importance of livestock production to the valley's agricultural activities.[21]

Idea for an Aqueduct

Cumulatively the numerous factors affecting Owens Valley farming contributed to a surplus of water, which was in marked contrast to the Los Angeles area where water was in short supply. Despite the large quantities spilling out onto valley fields from uncontrolled diversions, much of the Owens River flowed into the sink whence it evaporated. The plan for transporting this surplus to Los Angeles has generally been attributed to Frederick B. Eaton, former mayor of the city. In all probability, however, the original idea was conceived by his father, Judge Benjamin S. Eaton. Although a professional lawyer, Judge Eaton was also an amateur engineer, and the notion may have occurred to him as early as 1880.

Benjamin Eaton came to Los Angeles in 1850 after completing his law studies at Harvard. Three years later he became one of the city's first district attorneys.

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[21] U. S., Department of Commerce, Bureau of the Census, Fourteenth Census of the United States Taken in the Year 1920. Agriculture, Vol. VI., Pt. 3, 358.

His legal prowess subsequently brought him a judgeship, but it was his interest and ability in civil engineering which made him renown.

In 1858 Eaton's brother-in-law, John Griffin, bought the San Pasqual Rancho located just north of Los Angeles at the foot of the San Gabriel Mountains. A few years later Eaton and his wife moved to a hacienda there and helped found the city of Pasadena. Needing irrigation for his vineyards, Eaton constructed a system which delivered water from a canyon, afterwards called Eaton Canyon, several miles to the east of the community. He then applied his bent for engineering to the design and construction of the first iron-pipe domestic water supply system ever put into operation in California. So efficient was his design he was able to furnish water to the upper stories of Pasadena homes--an almost unknown luxury at that time.

Success brought requests for his services, and Eaton built similiar systems for the settlements at Cucamonga and Glendale. When Los Angeles determined to replace the open ditch and cask and barrel methods of supplying water to its residents, Benjamin Eaton was appointed construction engineer. It was he who introduced the convenience of iron pipes and pressurized distribution capable of reaching the tallest homes and buildings to a city accustomed only to <u>zanjas</u>, <u>ollas</u>,

and water men.[22]

Eaton's interest in the Owens River may have been aroused by reports of cattlemen who had driven herds to the valley during periods of drought in the Los Angeles area. Or, he may have learned of the valley's abundance of water from teamsters whose wagons rumbled down Los Angeles streets in the 1870's laden with tons of silver bullion. Mined in the Cerro Gordo in the Inyo Mountains high above Owens Lake, this bullion was transported across the lake in flat-bottomed steamers to the wharf at Cartago on the southern shore. There it was loaded onto wagons belonging to freighter Remi Nadeau and hauled south through the Mojave Desert by eighteen- and twenty-mule teams for transshipment at San Pedro Harbor. Before the return trip, teamsters laid over in Los Angeles where they piled high their wagons with mountains of potatoes, grains, fruit, nuts, wine, brandy, and countless other supplies for the miners.[23]

In the summer of 1880, Eaton traveled north over the dusty Mojave wagon road to the Owens Valley where he spent three weeks taking stream measurements. Although

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[22]J. M. Guinn, Historical and Biographical Record of Los Angeles and Vicinity (Chicago, 1902), pp. 247, 811; R. W. C. Farnsworth, ed., A Southern California Paradise (Pasadena, 1883), pp. 36, 48-51.

[23]Remi A. Nadeau, City-Makers (Costa Mesa, California, [no date]), pp. 63-72.

he never developed any ideas or plans he may have conceived at that time, he undoubtedly passed along his information and interest to his son; for, in 1893, Fred Eaton spent much of the summer touring the valley, investigating its terrain and envisioning plans to export its surplus water to Los Angeles. It was this vision he presented to Mulholland in 1904 during the height of the Southern California drought, a vision which nine years later materialized in the Owens River Aqueduct.[24]

One of four boys, Fred Eaton was born in 1855 in an old adobe house atop Fort Moore Hill that at one time had served as the pueblo jail.[25] Growing up in the semi-arid Los Angeles area and in the family of a successful irrigator, he came to understand the city's water problems and its need for a supplemental supply as perhaps few others ever did. Largely a self-educated engineer, his paternally acquired skills brought him acclaim at age fourteen when he won a $100 award in a design contest for the old plaza. In 1875, the Los Angeles City Water Company hired him as Superintendent and Chief Engineer. After nine years with this private company, the residents of Los Angeles elected him City Engineer, and during four

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[24] Los Angeles Times, March 13, 1934.

[25] The Los Angeles City Board of Education is now located on this historic hill overlooking the Santa Ana-Hollywood Freeway interchange.

years in office he planned and initiated the extensive Hyperian sewer system for the city. Then, in 1898, he was elected mayor of Los Angeles and served two years during the protracted drought of the time.[26]

Armed with his collective experience, Eaton began a personal search for water which took him to the Owens River Valley. In the course of his numerous visits, he discovered that the topography from the valley south to Los Angeles was relatively flat but with a gentle southward slope toward the Pacific Ocean. Eaton reasoned that at one time the Owens River must have followed this gradual decent all the way to the San Fernando Valley, there emptying into the Los Angeles River. Although subsequent geological study would correct this notion, his trained eye quickly discovered a possible route a man-made aqueduct could follow. He found that the only real barriers to an overall gravity flow canal were the small faulted hills just south of Owens Lake plus the more formidable uplifted mountains surrounding the Los Angeles basin.

While the latter presented a real obstacle to an aqueduct, Eaton was convinced of the possibility of a canal, and he discussed his idea with the Superintendent of the Los Angeles City Water Department, William

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[26]Gwinn, p. 247; Farnsworth, p. 49.

Mulholland. It was then 1893; the drought was just beginning; and the study of surrounding watersheds was ten years distant. Los Angeles was installing water meters to curb its insatiate thirst; the Los Angeles River was running 40,000,000 gallons daily, and Mulholland was amused by Eaton's proposal. Only a visionary would conjure up such a "dream" of importing water, Mulholland said. "'We have enough water here in the river to support the City for the next fifty years.'"

"'You are wrong,'" replied Eaton. "'You have not lived here as long as I and seen the dry years--watch and see.'"

Within ten years, Mulholland did see. The drought continued, the population of Los Angeles "climbed to the top and the bottom seemed to drop out of the river," and with it, Mulholland's amusement faded. It then was his turn to approach Eaton, asking him to "'Say it again regarding the Owens River.'"[27]

Eaton had not waited for Mulholland or other city officials, however; convinced that the city would require additional water and perceiving that the Owens River was the logical source, he proceeded on his own. Repeatedly he visited and vacationed in the Owens Valley, and he

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[27]As quoted in Los Angeles Evening Express, July 30, 1905, and Los Angeles Times, July 29, 1905.

took options and purchased riparian and other water bearing properties in the southern portion. By the spring of 1905 he had spent approximately $30,000 of his own funds for some sixteen miles of river frontage and nearly 50,000 acres of water-bearing lands. He also had an option on the only suitable site for a storage reservoir in the entire valley, the 22,670 acre Rickey Ranch.

As Eaton pursued his plans the drought intensified, and Mulholland began to experience second thoughts about Eaton's "dream" of Owens River water. As early as 1901 Mulholland's implicit faith in the ability of the Los Angeles River to meet city demands began to wither; by the fall of 1904 he had no doubts at all; the city was desperate and Mulholland approached Eaton.

As both a private and public official, Eaton had made notable contributions to the growth and development of Los Angeles. As a private citizen he would do likewise; but from the Owens River venture he hoped, simultaneously, to reap a small fortune. What Mulholland learned was that by 1904 Eaton conceived of the project as a joint private-municipal endeavor. Eaton proposed that Los Angeles build and pay for an aqueduct with a capacity of 20,000 miner's inches--approximately 270,000,000 gallons per day; Eaton would provide the necessary land for a diversion site for the aqueduct plus all water rights for the project. For its part, the city

would be guaranteed half the capacity flow, 130,000,000 gallons daily. Eaton and his associates would receive the remaining flow for use or sale outside the city; Eaton's portion would pay a toll to the city, however, for transmission through the aqueduct.

As an alternative proposal, Eaton suggested a cooperative arrangement in which the city would build and own the aqueduct and also own the water outright. In this arrangement, Eaton would provide the diversion site and all necessary water rights. In exchange, he would receive the right to develop and own all power installations incident to the aqueduct.[28]

Mulholland relayed these proposals to the Los Angeles City Board of Water Commissioners, the public agency established in 1902 to take charge of the municipal Water Department.[29] The Board was ambivalent toward Eaton's proposals. The specter of private interests in a public endeavor was hardly to their liking, especially in view of the city's recent struggle to regain control of its water supply. Conversely, the Commissioners were

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[28] First Annual Report of the Chief Engineer, p. 31; Los Angeles Times, July 29, 1905.

[29] The Board, which served without salary, was ordinanced in 1902 when the city assumed control of the water system. Originally called Board of Commissioners Domestic Water Works System, it was composed of seven members. In 1903 it was renamed Board of Water Commissioners by city charter amendment and its membership was reduced to five.

aware their options were few. Each day the flow of the Los Angeles River decreased, and there was little hope of supplementing it from a local source. At the same time, the needs of the city were mounting. This made the offer of 130,000,000 gallons of water daily, three times the river's flow, difficult to refuse. Such a quantity would suffice for two million people, the city's projected population. So, the Board sent Mulholland to the Owens Valley to investigate the river and the possibility of constructing an aqueduct through the Mojave Desert.

In September, 1904, Mulholland and Eaton journeyed north together. For three months the two engineers endured the rigors of camp life and a buckboard as they traveled through the desert and the valley searching for a practicable canal route and investigating streams. In the shadow of the Sierra they watched an annual runoff of 240,000 acre feet of the purest mountain water empty into the brine of Owens Lake.[30]

Upon returning to Los Angeles, Mulholland informed the Water Commissioners he was convinced an aqueduct could be constructed and that he favored the idea. Based on the information he had gathered, he estimated construction costs at $23,000,000 plus an additional $1,500,000 for necessary surveys. In all, Mulholland

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[30] Third Annual Report of the Reclamation Service, p. 64.

declared the aqueduct could be completed for less than $25,000,000.[31]

Mulholland's optimistic report, coupled with the unfavorable prospects for obtaining supplemental water from local sources, convinced the Board to negotiate with Eaton. The course of their negotiations, however, was what neither Eaton nor the Board could have anticipated. Eaton's hopes for reaping a fortune were upset while the Board was spared from any possible embarrassment that it might have incurred from a joint public-private enterprise. Had the city responded when Eaton initially approached Mulholland in 1893, the terms of any agreement they reached would have been the product of their own negotiations. By 1905, circumstances had changed, and the final terms they agreed upon were dictated largely by another agency.

Interest of the Reclamation Service

Ironically the awakening of the city's interest in the Owens River coincided with the attention directed toward the valley by an agency of the United States Government. In 1902 Congress responded to demands of the western farmer for government assistance in irrigating arid lands. The requested assistance was legislated in the Newlands Act which established the Reclamation

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[31] First Annual Report of the Chief Engineer, p. 18.

Service.[32] Essentially, the law set aside a large portion of the proceeds of public land sales in the arid western states to finance construction and maintenance of irrigation efforts in those states.

In searching for prospective reclamation projects within California, Service engineers identified eleven possible areas. One of these was the Owens Valley. In 1903 the Service dispatched engineer J. C. Clausen to investigate the valley's prospects. Arriving in June, Clausen surveyed sites for possible storage reservoirs; he initiated stream measurements to establish amounts of available water; and he inspected the valley's arid lands to determine their potential for cultivation.

Clausen reported that there was probably sufficient water to irrigate 80,000 to 100,000 acres, an increase of approximately 200 percent over existing acreage. To accomplish this increase, he pointed out that an artificial drainage system would be necessary because of the unusually high ground water table.[33] Subsequent investigation also revealed the inordinately high concentration of alkali in the soil. This compounded the need for an artificial drainage system which, along with removing the water, would permit the salts to be leeched

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[32] Now the Bureau of Reclamation.

[33] Third Annual Report of the Reclamation Service, pp. 64-65.

from the soil so the land could be brought into agricultural production.[34]

The Reclamation Service did not proceed beyond the stage of preliminary investigation, and by 1907 it had completely abandoned any idea of an Owens Valley project. Its Board of Engineers recommended that the limited funds then available be channeled into the more promising Yuma and Klamath Projects; and the Secretary of the Interior, under whose jurisdiction the Congress has placed the Reclamation Service, approved this proposal.[35]

That the Owens Valley was never recommended for irrigation development was the understandable cause of much bitterness and disappointment among valley farmers. They had equated the Reclamation Service actions of filing on water and withdrawing government lands from public entry as a Service committment to the project. These steps, however, were a standard preliminary when the Service investigated a possible development; they were taken to prevent speculators from buying up lands and reaping an unearned profit if the Service pursued the project. Such steps were not an indication the Service

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[34] Soil Survey of the Bishop Area, p. 94.

[35] U. S., Department of the Interior, United States Geological Survey, Seventh Annual Report of the Reclamation Service, 1907-08 (Washington, D. C., 1909), p. 65. The Owens Valley proposal was never approved by the Chief Engineer of the Reclamation Service, the Director of the Service, or the Secretary of the Interior.

was committed to a particular reclamation effort.

In the case of Owens Valley, there were two important considerations which caused the Service to stay the project: first, there was general agreement among the Board of Engineers that funds would be applied better in other parts of California than in this remote high mountain valley; second, the Service was quite willing, and in part obligated by the Reclamation Act, to defer to superior interests as defined by state water law.

The superior interests were those of Los Angeles. The California State Supreme Court had recognized the preeminence of municipal needs over other existing water rights. Thus, when Eaton's proposal for an aqueduct was presented to the Reclamation Service, Frederick H. Newell, Chief Engineer, and Joseph B. Lippincott, Supervising Engineer, informed the city the Service would withdraw in favor of an exclusively municipal project but not one including private interests.[36]

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[36]Frederick H. Newell, "The Reclamation Service and the Owens Valley," Out West, XXIII, No. 4 (October, 1905), pp. 455-60; Letter, from Joseph B. Lippincott to Fernand Lungren, September 19, 1905, Lungren Papers, Huntington Library, as reprinted in full in Abraham Hoffman, "Joseph Barlow Lippincott and the Owens Valley Controversy; Time for Revision," Southern California Quarterly, LIV, No. 3 (Fall, 1972), pp. 245-51.

Section 8 of the Reclamation Act said "nothing in this act shall be construed as affecting or intended to affect . . . or interfere with the laws of any state . . . relating to the control, appropriation, use or distribution of water . . . or any vested right . . . ."

See Lux v. Haggin, 69 Calif. 255, 302 (1886) for the superiority of municipal interests.

With his hopes for personal fortune dashed, Eaton offered to sell his property options and water rights along the Owens River to Los Angeles at his costs. He also tendered his services to the city in obtaining additional options on other properties in the valley.

Titanic Project to Give City a River

Los Angeles had reached the Rubicon. Its river appeared to be drying up, and the studies of Mulholland and Lippincott showed conclusively that supplemental water was not readily available from sources surrounding the city. In the Owens Valley, first guagings by the Reclamation Service indicated there was a surplus annual flow in excess of 240,000 acre feet, and there were only intimations of the vast amounts of ground water. In addition, Fred Eaton had offered to convey to the city most of his valley interests without profit to himself.

With these considerations in mind, a group of city officials went to the valley in April 1905 for a personal inspection of the river and intervening terrain. The delegation was composed of Mayor Owen McAleer, City Attorney William B. Mathews, Board of Water Commissioners John J. Fay and J. F. Elliot. Fred Eaton and William Mulholland accompanied the group. Based on all available information concerning sources of water both in and outside Southern California that were adequate for the city's needs, these officials concluded "the Owens afforded the

only adequate supply that could be obtained by the city at a cost which it could be justified in incurring."[37]

On May 22, 1905, the city contracted to pay Eaton $450,000 for sixteen miles of Owens River frontage, some 22,000 acres of valley land, and an easement to 2,684 acres at his reservoir site north of Bishop in Long Valley. The following month the city also accepted Eaton's offer to obtain further options on valley properties.[38]

Only when these arrangements were completed did the Board of Water Commissioners inform the city's commercial organizations of the steps it had taken to obtain additional water and of the probable costs. At this startling revelation, the Chamber of Commerce immediately appointed a special investigating committee of its own to report on the new source of water and on the advisability of supporting a $1,500,000 bond issue to defray preliminary costs that the city proposed to include on the September ballot. On September 1, 1905, this special committee reported its wholehearted approval of the entire project and recommended that the Chamber of

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[37]City of Los Angeles, Board of Water Commissioners, Report for the Year Ending November 30, 1905 (Los Angeles, 1906), p. 5.

[38]First Annual Report of the Chief Engineer, pp. 75, 87.

Commerce support the bond issue.[39]

Meanwhile, the Water Board had been forced to take the city's newspaper editors into their confidence. When Mayor McAleer and other city officials had accompanied Eaton and Mulholland into the valley in April, the editors had quickly discovered their absence from the city. Until then, all negotiations had been kept secret. The Water Commissioners had not even informed the City Council of their discussions with Eaton and the Reclamation Service. The Commissioners feared that any news leaks would precipitate a rush of speculators into the valley in quest of water rights and properties. Unfortunately, when reporters discovered that the officials had quietly left the city, it forced the Board to inform the newspapermen of recent events. In exchange for the confidence, the editors pledged themselves to maintain the secret until the commissioners permitted them to release the story.

For nearly three months the editors kept their promise. Then, without warning on July 29, 1905, Harrison Gray Otis broke the trust. Determined to scoop his competitors, he blazoned the story in huge headlines across the Los Angeles Times: "Titanic Project to Give

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[39]City of Los Angeles, Department of Public Service, Complete Report on Construction of the Los Angeles Aqueduct (Los Angeles, 1916), p. 14.

City a River." Over the entire front page of Part II of the Saturday morning issue citizens read the story of a water supply of 30,000 miners' inches--402,000,000 gallons daily--five times the city's current supply and enough for a city of 2,000,000 people.[40]

In 1905 few Angelenos could remember the Owens Valley; fewer yet had ever heard of the Owens River. Not since the prosperous days of the Cerro Gordo and the lumbering wagons of Remi Nadeau had the valley been important to the city. But by September 7, 1905, when the initial $1,500,000 bond election was held, many Los Angeles residents knew more about the Owens Valley than they did about their own basin. From July 29 to the day of the election, city newspapers barraged readers with articles on virtually every feature of the valley and all aspects of the proposed aqueduct.

The Los Angeles Times was the most ardent supporter of the aqueduct and, with one exception, other city papers favored the proposal. The sole and outspoken opponent was the Examiner. Partially from chagrin that its leading competitor had broken the story prematurely, the Examiner raised numerous, and generally captious, objections. It questioned the wisdom of voting bonds for the aqueduct

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[40]There were various inaccuracies in the Times article not the least of which was the reported amount of water supposedly available. The accurate amount was 20,000 miners' inches.

before a more thorough investigation of the entire project was made; it suggested that Piru Creek was superior to the Owens River as a source of water; it accused the Water Commissioners of trying to rush the project so the people could not examine all its ramifications;[41] and, it contended the final costs of the project would be more than twice those projected by Mulholland.[42]

The Examiner further charged that too many individuals, such as Fred Eaton, would personally benefit from the project.[43] The paper's chief opposition was focused on the windfall profits certain San Fernando Valley land speculators would reap because the aqueduct would terminate in the valley making irrigation water available there. Among these speculators was none other than Harrison Gray Otis, publisher of the Los Angeles Times, to which cause the Examiner attributed Otis' ardent support of the project.[44]

The Examiner's allegations and the Times' responses were frequently caustic, particularly after August 24, when the Examiner named the owners of the San Fernando

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[41]Los Angeles Examiner, August 2, 1905, August 1, 1905.

[42]Ibid., August 2, 1905.

[43]This allegation was repeatedly made. For example, see Los Angeles Examiner, July 30, 1905.

[44]Los Angeles Examiner, August 24, 1905.

Valley lands. Despite their venom, the diatribes performed a service for the city in that they exposed the readers to every nuance of the aqueduct project. Many of the criticisms expressed by the Examiner would be raised again by others at a later date;[45] but just before the bond election, even the Examiner gave grudging lip service to the project. Coupled with the unflagging support of the other city newspapers, the Express, the Herald, and, of course, the Times, plus the enthusiastic endorsement of the Chamber of Commerce, there was an ostensible consensus among the media in favor of the bonds by election day.

However grudging the support of the Examiner may have been, few Angelenos had any doubts. When the ballots were counted on the night of September 7, 1905, the highest percentage of affirmative votes ever cast in a Los Angeles bond election was recorded in favor of incurring the indebtedness: the $1,500,000 issue passed by a fourteen to one majority--10,787 to 755.[46]

The city now had funds to initiate surveys and to buy necessary lands for water rights, rights-of-way, and

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[45]For a collection of criticisms, see the official investigation of the aqueduct in, City of Los Angeles, Aqueduct Investigation Board, Report of the Aqueduct Investigation Board of the City of Los Angeles (Los Angeles, 1912).

[46]Los Angeles Times, September 8, 1905.

a diversionary site for the canal. The city also took the necessary steps to establish its rights to the surplus waters of the Owens River under state water law. Yet the city could proceed no further until the United States Reclamation Service withdrew from the valley. So, in June, 1906, the city sent to Washington a delegation composed of William Mulholland, William B. Mathews, and representatives of the Chamber of Commerce W. J. Washburn and J. O. Koepfli.

These men explained the needs and exclusively municipal proposal of Los Angeles to Charles D. Walcott, Director of the Geological Survey, F. H. Newell, Chief Engineer of the Reclamation Service, Gifford Pinchot, Chief Forester, and E. A. Hitchcock, Secretary of the Interior. Lastly, on June 25, 1906, they met with President Theodore Roosevelt.

As an outgrowth of these conferences, the Reclamation Service withdrew from the Owens Valley and Congress passed Public Law 394, enabling legislation necessary for Los Angeles. This act of June 30, 1906, granted to the city all necessary rights-of-way for canals, reservoirs, electric power plants, and transmission lines. Los Angeles was authorized to buy all required lands at $1.25 per acre. The Reclamation Service was instructed to provide the city with all its data on the Owens Valley, including preliminary surveys and examinations, and stream

measurements. For this information, Los Angeles was to reimburse the Service up to a maximum of $14,000.[47]

With the way officially cleared for work to begin, the Water Board took one last precautionary step to assure themselves and the city that the project was feasible both from the economic and engineering standpoints. In November 1906, the Board contracted with three of the most distinguished hydraulic engineers in the United States to investigate and give their disinterested opinions on the proposed aqueduct. The engineers were Frederick P. Stearns, President of the American Society of Civil Engineers and member of the Isthmian Canal Commission; John R. Freeman, nationally recognized hydraulic specialist; and James Dix Schuyler, dam builder and author of Reservoirs for Irrigation, Water Power and Domestic Water Supply, with an Account of Various Types of Dams, a ponderous volume that was considered the last word on dam construction.

At the end of December these engineers returned their findings. They reported that a supply of 20,000 miner's inches of the finest quality water was available; they asserted that all necessary land purchases and

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[47] U. S., Statutes at Large, 801 (June 30, 1906); U. S., Department of the Interior, United States Geological Survey, Sixth Annual Report of the Reclamation Service, 1906-07 (Washington, D. C., 1908), p. 72; First Annual Report of the Chief Engineer, Appendix C, pp. 90-92.

construction activities could be completed within Mulholland's original cost estimates; and, they concluded, the project was well planned in every detail and they felt it would guarantee the continued prosperity of Los Angeles.[48]

With this assurance in hand, the Board ordered preliminary work to begin and then called for a bond election on June 12, 1907, to obtain the necessary $23,000,000 construction funds. The announcement of this election was the signal for foes again to air their criticisms of the project. The major newspaper supporter of the aqueduct and bond issue was still the Times. Principal opposition no longer came from the Examiner, however, but from a new paper, the Los Angeles Evening News. Edited by a former Otis employee, Samuel T. Clover, the Evening News became the outstanding newspaper critic.

While the views of the Evening News turned the election into a hotly contested, and at times caustic, campaign, the issues were essentially reruns of 1905: city residents would be taxed for the benefit of San Fernando Valley land owners; these land owners would reap exorbitant profits because of the aqueduct; and, other Southern California rivers, such as the San Gabriel,

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[48] Complete Report on Construction, pp. 16-17.

were more than adequate for the city's needs. Clover did add one new twist: he alleged the Owens River was too alkalin for human consumption.[49] Such a charge would have amused valley farmers who had been drinking the river's water for fifty years.

When the ballots were counted, they showed the News was little more successful than the Examiner had been in 1905. While the margin of victory had dropped from fourteen to one the earlier bonds had received to a majority of ten to one, it was still an impressive victory. The final count was 21,923 in favor; 2,128 opposed. The overwhelming number of voters were unquestionably in favor of the aqueduct.

The countless preparations for construction then began in earnest. With a portion of the earlier bond money, the city had purchased sixteen miles of Owens River frontage and appurtenant riparian water rights from Fred Eaton. The city needed these rights to protect itself against adverse diversions and legal injunctions by downstream riparian owners when it diverted water from the river. Under no circumstances, however, did these riparian rights entitle the city to remove water from the Owens Valley. Throughout California riparian

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[49] Los Angeles Evening News, April 10, 1907, May 15, 1907.

rights permitted owners only local use of the water. To understand the basis on which the city was legally authorized to remove water from the Owens Valley and transport it over 200 miles for use in Los Angeles, one must turn to the water laws in California and the bitter struggle that occurred incidental to their growth in the state.

Chapter III

Shaping California Water Law
1781 to 1928

Of all California's natural resources, her most precious and vital is water. Water is California's white gold, and Californians covet and mine it with as much ardor today as the Argonauts did the yellow metal itself over a century ago. The incalculable worth of water is illustrated by the necessity to import it in order to make possible in much of the state life as it is known in the twentieth century. Even as early as the boom of the 1880's the California State Engineer reported that not more than one-sixth of the state could support a heavy population without importing water, while hardly one-third of the state could sustain even a sparse population without a foreign supply.[1]

By the 1960's, this early warning had been given more precise definition by hydrographic and demographic studies. As a result of California's rainfall pattern and the propensity of people to live in a semiarid

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[1]William H. Hall, "Irrigation in California," a paper presented to the National Geographic Society, Washington, January 25, 1889, National Geographic Magazine, I, No. 4 (1889), p. 278.

region, a tremendous disparity had developed which found population centers and areas of abundant rainfall inverted. Measurements taken from 1894 to 1947 showed that California produced a mean annual water crop, or runoff, of 70,798,000 acre feet.[2] Of this total, seventy-three percent originated north of a line drawn east-west through Sacramento. Of the remaining twenty-seven percent, nearly twenty-five percent was furnished by the San Joaquin Valley region. Thus, only some two percent of the state's total water resource remained for the area south of the Tehachapi Mountains in which by the latter 1960's approximately sixty percent of the state's total population resided.[3]

Beginning with the efforts of Los Angeles at the

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[2]An acre foot of water equals 325,000 gallons.

[3]California, Department of Water Resources, The California Water Plan, Bulletin No. 3 (Sacramento, 1957), pp. 14-15; Robert W. Durrenberger, Patterns on the Land: Geographical, Historical and Political Maps of California (3d ed. rev.; Woodland Hills, 1965), pp. 8, 52-53; Erwin Cooper, Aqueduct Empire (Glendale, 1968), p. 27.

Interestingly, in the entire trans-Rocky Mountain West, there is a similiar, though less extreme, disparity between population concentration and water resource concentration to that which exists in California. The Southwest, with its bankrupt Colorado River, has approximately thirteen percent of the nation's population and only one percent of its runoff water, The Northwest, drained by the Columbia River, has twelve percent of the nation's water crop and only some three percent of its population.

The average annual flow of the Colorado River at Harper's Ferry is 15,000,000 acre feet; the Columbia River flow is calculated at some 160 to 180,000,000 acre feet.

century, this physical anomaly has been countered to a degree by transporting water hundreds of miles from sources of abundance to areas of need. The necessity of such action is prescribed in the California Water Code. It declares that the people have a "paramount interest" in the use of all the state's supply, and that the people shall determine how this indispensable resource can be best developed for the greatest public benefit. To achieve this "benefit," common domestic needs such as drinking and washing are given first priority; second priority is accorded agricultural applications.[4]

The California Supreme Court also has recognized the great "necessity" of the state's water to its well-being. The court has ruled that water shall not be "allowed to run waste"[5] nor remain unused, regardless of prior claims and rights, if such water can be beneficially applied by others.[6]

But the laws governing California's water have not always been orientated toward optimum public benefit; they progressed to that stage only after years of bitter struggle and costly litigation. The long intrastate

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[4]California, Water Code, Sections 104, 105, 106, in Deering's California Codes (San Francisco, 1954), II, 113-14.

[5]Hufford v. Dye, 162 Calif. 147, 159 (1912).

[6]Burr v. Maclay Rancho Water Co., 154 Calif. 428, 436 (1908).

fight over the use of water resources, the so-called California Water Controversy which became particularly acrimonious by 1970, is relatively common knowledge. Bond propositions associated with the Central Valley Project of the 1930's and with the more inclusive California Water Plan of the 1960's were passed only by rather narrow margins provided by the voters in the areas to be benefited. Yet, the more explosive struggle through which the indispensable and prerequisite water laws have evolved is less well known.

Legal authorities have dealt at length with the multiplicity of concepts, doctrines, and court decisions which, over the years, have come to form a part of the exceedingly complex subject of California water law.[7] In the large body of literature dealing with this subject, however, historians have contributed only little toward a perspective of this struggle and of the influences which have marked the turning points in the shaping of the laws. Beginning even before statehood and continuing to the 1970's, this legal struggle raged with greatest intensity from the decision in Lux v. Haggin in 1886 to the passage of a constitutional amendment in 1928.

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[7]Among early writers, Clesson S. Kinney and Samuel C. Wiel are eminent. More recently, Wells A. Hutchins, Harold E. Rogers and Alan H. Nichols are notable. These authorities, and others, are cited repeatedly in the following pages.

In large measure the conflict resulted from the increasing demands of an expanding population for a relatively fixed and limited amount of water. Of greater moment was the effort to develop this natural resource in an ambivalent situation in which the state attempted to serve two legal masters--the legislature and the judiciary--which followed antithetical courses toward water rights.

As a result California water laws have come to reflect a plethora of experiences and concepts. These include such varied facets as pueblo rights, correlative rights, the doctrines of relation, adverse use, prescription, reasonable use, and still others. Forming the foundation for the entire legal structure, and causing an "irrepressible conflict,"[8] are two diametrically opposed principles--the common law doctrine of riparian rights, championed by the state Supreme Court, and the arid-region doctrine of prior appropriation, advanced by the state legislature. The attempt to reconcile these two divergent systems of water rights has not only impeded the development of this great natural resource, but it has given to California the unenviable distinction of having suffered through more litigation over water

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[8]This eminently appropriate epithet was applied by Clesson S. Kinney in A Treatise on the Law of Irrigation and Water Rights, (2d ed. rev.; San Francisco, 1912), IV, 3172.

rights than any other state in the Union.[9]

The Pueblo Right

The evolution of California's water law has been a concomitant of the growth and development of the state. And, as with so much of its history, water rights have antecedents reaching back into its Spanish and Mexican past. These antecedents are found in one of the state's earliest water rights, one which has been of inestimable value to Los Angeles, the pueblo right. This distinctive feature in California's water law is one which may be held by cities succeeding Spanish and Mexican pueblos.

A major Spanish frontier institution, pueblos were originally civilian agricultural colonizations. Upon foundation, four square leagues of land were set aside as communal property belonging to the pueblo. By virtue of owning this land, the pueblo was entitled to provide its residents with water from the stream or river on which it was located.[10] The water was the common property of the inhabitants; it was administered by the town officials as a public trust and was supplied for domestic purposes,

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[9]S. T. Harding, Water in California (Palo Alto, 1960), p. 32; Lucien Shaw, "The Development of the Law of Waters in the West," California Law Review, X, No. 6 (September, 1922), p. 444.

[10]This was recognized by the California Supreme Court in Lux v. Haggin, 69 Calif. 255, 329 (1886); see also, Samuel C. Wiel, "Political Water Rights," California Law Review, X, No. 2 (January, 1922), p. 116.

stock watering, and, of course, for irrigation.[11]

Contrary to a subsequent occasional claim of Los Angeles, pueblo rights were not special private grants of exclusive ownership or even exclusive use of adjacent waters.[12] In general the settlers were granted "water privileges . . . in common with the residents and natives of the adjoining and neighboring pueblos . . . ."[13] While the distinction between common use and exclusive rights is marked, pueblos were accorded a most important

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[11] Regulations for Governing the Province of the Californias approved by His Majesty by Royal Order, October 24, 1781, trans. John Everett Johnson (San Francisco, 1929), section 8, title 14, p. 45. This is the Bucareli-Neve Reglamento.) Title 14 is located also in John W. Dwinelle, The Colonial History of the City of San Francisco (San Francisco, 1863, reprinted, San Diego, 1924), Addenda IV, pp. 3-7. See also Wells A. Hutchins, The California Law of Water Rights (Sacramento, 1956), p. 256.

[12] Samuel C. Wiel, Water Rights in the Western States (3d ed. rev.; San Francisco, 1911), I, 68: Vincent Ostrom, Water and Politics (Los Angeles, 1953), p. 33; Kinney, I, 995.

[13] This quotation is from the provision for the pueblo of Pitic in Sonora, 1789. Subsequent to its foundation, the King of Spain provided, by general ordinance, that this "plan of Pitic" be followed in the establishment of any new pueblos in the areas which now comprise the states of California, Arizona, New Mexico, and Texas. Kinney, I, 994-97. The plan is reprinted in Dwinelle, Addenda VII, pp. 12-17.

There is no clear distinction between California pueblos established prior to and those established subsequent to the "plan of Pitic." The former pueblos, such as Los Angeles, simply followed the system then practiced in Spain of holding water as common property of the inhabitants. Hutchins, p. 256. In either case, the water rights were held as a type of public trust.

concession by being allowed the use of waters on the surrounding public lands as this use extended to the right to meet all needs of the settlement. Further, although Spanish-Mexican water law normally was based on the riparian doctrine, the pueblo right was superior even to the rights of upstream riparian users.[14]

The pueblo right of Los Angeles was first challenged by an upstream riparian user, Mission San Fernando, shortly after the mission's establishment in 1797. The mission fathers decided to increase their own water supply for irrigation, and they constructed a dam near the headwaters of the river in the vicinity of present-day North Hollywood. Pueblo authorities immediately demanded the removal of the obstruction and, when the padres refused, brought legal action.

The mission claimed it had an equal right to the use of the waters; but, after a decade of controversy, Spanish authorities upheld the superior right of the pueblo: the mission was allowed to supply its wants from the river, but it was required to accede to the needs of the pueblo in the event the river was inadequate to meet the requirements of both communities, Later,

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[14] See the observations of the court in Lux v. Haggin, 69 Calif. 255, 331.

Legal authorities are not agreed that in all applications the riparian doctrine formed the basis of Spanish-Mexican water law. See, for example, the arguments in Texas v. Valmont Plantation, 346 S. W. (2d) 852 (1961).

during the Mexican period, the mission again challenged Los Angeles only to have the superior right of the pueblo reasserted.[15]

When the United States acquired California in 1848, the terms of the Treaty of Guadalupe Hidalgo called for the recognition of vested property rights established under Spanish and Mexican law. Subsequently the United States Supreme Court ruled that any water rights thus claimed were solely questions of state jurisdiction,[16] but in the interim the California legislature and supreme court had repeatedly protected pueblo rights.

In 1873 the sweeping claims of Los Angeles[17] were expressed by the legislature when it granted the former pueblo "in absolute ownership, the full, free, and exclusive right to all of the water flowing in the River of Los Angeles" from its source to its intersection with the southern boundary of the city. Further, the city was

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[15]Boyle Workman, The City that Grew (Los Angeles, 1935), p. 72; Ostrom, pp. 30-31.

[16]Hooker v. Los Angeles, 188 U. S. 314, 317-18 (1903), dismissing writ of error in Los Angeles v. Pomeroy, 124 Calif. 597 (1899).

[17]The city had claimed "full, free and exclusive use" of the waters in the Los Angeles River in actions against the upstream riparian Los Feliz Rancho. See Edward C. Boggs, "A Study of Water Rights on the Los Angeles River, California," in U. S. Department of Agriculture, Report on Irrigation Investigations in California, by Elwood Mead (Washington, 1901), p. 336.

authorized to develop and utilize the entire subterranean flow of the river.[18]

The test of its "absolute ownership" began in 1881 after Los Angeles had been forced to shut off the irrigation supply of upper riparian users following a drop in the river's flow. In its first decision regarding the pueblo right, the state supreme court held that, by act of the legislature, Los Angeles had "succeeded to all the rights of the former pueblo." Since its foundation in 1781, the court said, these rights had been "recognized by all the owners of land on the stream" as including "all the waters of the river." The court therefore held that an adverse claim could not now be asserted against the city, that Los Angeles held the "paramount right to the use of the waters of the river" to the extent of the "needs of its inhabitants," and that the city could "manage and control" the river for that purpose.[19]

The court later upheld the city's right to the subterranean flow of the river,[20] including the entire

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[18] California, Legislature, Statutes of California Passed at the Twentieth Session of the Legislature, 1873-74 (Sacramento, 1874), pp. 633-34.

[19] Feliz v. Los Angeles, 58 Calif. 73, 79-80 (1881).

[20] Los Angeles v. Pomeroy, 124 Calif. 597, 636 (1899). The court recognized that a different ruling could conceivably deny Los Angeles and its 100,000 inhabitants of all water.

underground supply of the San Fernando Valley basin.[21] The court ruled that the city's right was restricted to the use of water within its boundaries; Los Angeles could not export any surplus outside the city.[22] Nevertheless, the right was elastic and expanded with the city's growth to the full extent of its needs.[23] Others might use the waters in years of surplus; but, just as San Fernando Mission was required to accede to the superior right of the pueblo, any user must relinquish the waters in the event they were needed by Los Angeles.

The pueblo right thus allows for a continued growth, both by direct increase of population and through annexations of land not within the limits of the original pueblo.[24] This elasticity of right, which can expand until a city claims the entire flow of a river, is not found in the doctrine of riparian rights or of prior

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[21] Los Angeles v. Hunter; Los Angeles v. Buffington, 156 Calif. 603, 607-08 (1909). The court said that the San Fernando Valley was "unquestionably" the reservoir and supply of the Los Angeles River and to cut off this supply would destroy the river.

[22] Feliz v. Los Angeles, 58 Calif. 73, 79-80 (1881); Vernon Irr. Co. v. Los Angeles, 106 Calif. 237, 250-51 (1895).

[23] Los Angeles v. Pomeroy, 124 Calif. 597, 649-50; Los Angeles v. Hunter, 156 Calif. 603, 608-09 (1909), where the court referred favorably to Los Angeles v. Pomeroy.

[24] Los Angeles v. Pomeroy, 124 Calif. 597, 649-50.

appropriation. Thus, water rights based upon the old Spanish-Mexican pueblo right are among the strongest rights a municipality can have;[25] they are paramount and superior to the claims of all others.[26]

Judicial interpretation of the pueblo right has been formed almost entirely on the basis of claims presented by Los Angeles. San Diego has an adjudicated "prior and paramount right to the use of the waters" of the San Diego River.[27] These are the only two California cities, however, which have established their pueblo right through judicial action.

Doctrine of Prior Appropriation

While the full extent of pueblo rights was yet to be defined by the legislature and the courts, a struggle had commenced which would prove to be of great significance for the overall development of California's water resources. This struggle began after American acquisition

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[25]Kinney, III, 2593.

[26]In the years following 1928, valley cities, especially Glendale and Burbank, repeatedly challenged the rights of Los Angeles. In 1967 they obtained a Superior Court decision in their favor; upon appeal, however, the California Supreme Court again affirmed the prior and paramount rights of Los Angeles both to the native waters of the San Fernando Valley and to the artificially replenished waters imported into the basin through the Owens River Aqueduct. Los Angeles v. San Fernando, et. al., 14 Calif. (3d) 199 (1975).

[27]See San Diego v. Cuzamaca Water Co., 209 Calif. 105, and San Diego v. Cuzamaco Water Co., 209 Calif. 152 (1930).

and, oddly enough, at a time when authorities were confidently declaring that the laws governing water rights already had been settled in American courts.[28] Unfortunately, subsequent events proved the antithesis to be correct. In fact, in the western American states, water law had what amounted to an almost constantly accelerating rate of change until the 1940's.[29] In no state was this change more apparent than in California.

Even before the signing of the Treaty of Guadalupe Hidalgo on February 2, 1848, forces had been set in motion that would exert one of the greatest influences on the law of California water rights. James Marshall's discovery of gold at Coloma triggered a world-wide rush to the "diggins" in search of the golden fleece. California's population mushroomed from a few thousand in 1848 to possibly as many as 165,000 by 1850.[30] The overwhelming proportion of this

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[28]See John K. Bennett, "Some Uncertainties in the Law of Water Rights," Southern California Law Review, XXI, No. 4 (July, 1948), p. 344.

[29]Wells A. Hutchins, Selected Problems in the Law of Water Rights in the West (Washington D. C., 1942), p. iii.

[30]The 1850 census figure was 92,597. The returns of San Francisco, Contra Costa and Santa Clara were lost, however, and it is estimated that actual population may have ranged from 140,000 to 165,000. Warren Thompson, Growth and Changes in California's Population (Los Angeles, 1955), pp. 9, 11.

multitude were miners. Only one out of fifty farmed.[31]

Effective mining required water: lots of it! The early discoveries were made in alluvial deposits and this placed a premium on water for placer methods, especially hydraulicking. The miners thus began the earliest extensive use of water in the state.[32] They simply helped themselves to the waters as they were helping themselves to the gold; initially there were no laws or prior claims to interfere.

When the mines were not located on streams, streams were brought to the mines. With miners willing to pay up to $45 a day for water, enterprising individuals formed companies, built ditches and flumes, and transported the waters of rivers and lakes to mines however distant. The longest diversion, the Eureka Canal, stretched 247 miles through El Dorado County,[33] rivaling in length some modern aqueducts. By 1882 there were over 6,000 miles of ditches and flumes winding throughout the gold country, which, along with the various other necessities of hydraulic mining, represented an investment of

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[31]Winston W. Crouch et al., California Government and Politics (3d ed.; Englewood Cliffs, 1964), p. 35.

[32]Harding, p. 33

[33]Paul Ditzel, "Methods in the Madness," Westways, LIX, No. 5 (May, 1967), p. 56.

over $100,000,000.[34]

This proliferation of mining activity, coupled with periods of little rainfall, led to shortages on streams used by the miners. And, suddenly, as the demand for water exceeded the supply, the relative rights to its use became important. So, the miners took steps to provide legal protection for their water supplies and their necessary diversion projects.

In general, the mining areas were located on what became a part of the public domain upon ratification of the Treaty of Guadalupe Hidalgo. Yet Congress passed no laws governing the activities of the miners; it made no provision for the acquisition of private title to the mineral lands, to the minerals in the lands, or to the waters flowing over the lands. The federal government simply acquiesced silently as the miners trespassed upon public lands and appropriated both minerals and waters.

In addition to the absence of laws, there was an absence of effective government during the initial period of the gold rush. This was particularly true in the mining areas.[35] The situation forced the miners to devise

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[34]Harold E. Rogers and Alan H. Nichols, Water for California (San Francisco, 1967), I, 21.

[35]Colonel Richard B. Mason, Commander of the California Military Government, said: "This is public land and the gold is the property of the United States; all of you here are trespassers, but as the Government

their own rules for regulating conditions in the mines and for determining the basis for acquiring and holding mineral claims. These rules differed in the various districts, but one cardinal principle obtained throughout: priority. "First come, first served."

A discoverer was uniformly protected in his right to stake and work a claim. To prevent either a monopoly of gold-bearing areas or the idle holding of claims, the rules generally limited the area that could be held and required that each claim be worked in order to retain title. The miner also had to post a public notice indicating the extent of his claim and file a copy of the notice with some specified agency.[36]

When the need arose to define rights to the waters used to work the claims, it was only natural that the miners would apply these same principles. The principle of priority, implicit in discovery, was the prime requisite in acquiring title: "first in time, first in right." The first, or prior, appropriator was recognized as having a right to as much as the full flow of a stream. Any remaining water could be taken by others according to their own order of priority. When a stream flow was

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is benefited by your getting out the gold, I do not intend to interfere." As quoted in Wiel, Water Rights, I, 72.

[36]Harding, p. 33.

completely appropriated, no user, not even the first, could increase his own supply at the expense of any other user on that stream. To prevent a monopoly or a speculative holding, miners restricted rights to the amount of water that could be put to reasonably beneficial use. Unused rights were subject to forfeit.[37] Finally, the miners required the posting and filing of a notice of appropriation and diligence in the construction of any diversion works. In this manner, the doctrine of prior appropriation, as a basis for acquiring and maintaining water rights, received its first application in the United States.[38] The soundness of these miners' customs was attested when they not only became the basis for federal mining laws but also supplied the precedents for

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[37]This requirement, incorporated in the Civil Code of 1872, was partially responsible for involving Los Angeles in a controversy over use of Owens River water for irrigation of San Fernando Valley lands.

[38]Wiel, I, 74. Writing in 1912, Kinney said that, as far as he had been able to determine, prior appropriation "was something entirely new as far as all systems of law of the world governing waters were concerned." He concluded that the "element of priority . . . under the Arid Region doctrine of appropriation, had its very inception in the rules, regulations, and customs of the miners at the time of the great rush for gold . . . to California." I, 1044-45.

More recent investigation indicates, however, that the element of priority had an earlier application in the laws governing miners' activities throughout the important mining regions of the world. See William E. Colby, "The Freedom of the Miner and its Influence on Water Law," Legal Essays in Tribute to Orrin Kip McMurray, ed. Max Radin and A. M. Kidd (Berkeley, 1935), pp. 67-84.

both legislative and judicial actions concerning appropriative water rights throughout most of the western states.[39]

The California legislature was the first to sanction officially the principle of appropriative water rights. In a statute of April 1851, the legislature prescribed the rules of the mining camps applicable by the state courts in determining rights among miners. The act read:

> In actions respecting "Mining Claims," proof shall be admitted of the customs, usages, or regulations established, or in force, at the bar or diggings, embracing such claims; and such customs, usages, or regulations, when not in conflict with the Constitution and Laws of this State, shall govern the decision of the action.[40]

While the act did not specifically mention water, the courts were soon called upon to resolve conflicts directly involving water. Disputes had broken out in the mining camps almost immediately, and the first case reached the California Supreme Court in 1853. Although the court rejected priority of appropriation as "impracticable in its application," it did affirm that any property right in water was "usufructuary" only, and, at that

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[39]The substance of these customs was adopted by nearly every western state legislature. Kinney, I, 1046-47.

[40]California, Legislature, Statutes of California Passed at the Second Session of the Legislature, (Vallejo, 1851), p. 149 (April 29, 1851).

a user was entitled simply to a "reasonable use."[41]

Two years later the court reversed its decision and recognized the doctrine of appropriation. The precedent setting case, Irwin v. Phillips, was between a canal owner who had diverted water from public land and a miner who later staked a claim on public land adjoining the diverted stream. The miner then insisted the stream must be allowed to flow in its channel. In upholding the right of the canal owner as the prior appropriator, the court pointed out that, although the mineral lands were almost wholly in the public domain, Congress had not provided for their disposition. Nevertheless, it had "tacitly assented" to the "free and unrestrained occupation of the mineral region" while the state had

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[41] Eddy v. Simpson, 3 Calif. 249, 252-53 (1853). The court here emphasized the usufructuary right in water; I have emphasized this early appearance of the concept of "reasonable use," which the miners were applying; they were not claiming ownership in the corpus of the water. In 1880 the court said ownership in the corpus of the water occurred after the water had "passed into the ditch" of the appropriator. Parks Canal and Mining Co. v. Hoyt, 57 Calif. 44, 46 (1880). Throughout the history of its rulings on water rights, the court was frequently inconsistent, and it was not consistent in this position either. On other occasions it was more cautious. In Lindblom v. Round Valley Water Co., 178 Calif. 450, 456 (1918), the court held that ownership in the corpus of the water did not exist except, perhaps, in the water "actually reduced to possession" in a reservoir. For a discussion of the cases dealing with water as realty and personalty see Hutching, Law of California Water, pp. 38-40, and Rogers and Nichols, I, 189-90.

"heartily encouraged" such occupation by its "legislative policy." As a result, the miners' customs had become "so firmly fixed" that they were looked upon as having the "force and effect" of law. The court concluded that since the state

> has conferred the privilege to work the mines . . . [and] has equally conferred the right to divert the streams from their natural channels, and as these two rights stand upon an equal footing, when they conflict, they must be decided by the fact of priority, upon the maxim of equity, "He who is first in time is first in right."[42]

Thus, within a few years after statehood, principles had been established that waters on the public domain were subject to appropriation on the basis of priority. The simple act of diversion invested the appropriator with the right to take as much water as he could beneficially use. Because the United States had acquiesced in these diversions, its riparian rights were ignored and the water was treated as property having no owner.[43]

Still, it was generally acknowledged that ultimate title did lie with the federal government, and that the

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[42] Irwin v. Phillips, 5 Calif. 140, 146-47 (1855). The court was speaking, of course, of water on the public domain.

[43] Although agriculture and manufacturing, and any other such beneficial use, were on an equal footing in appropriating water, use at this time was confined almost exclusively to mining on the public domain. For a brief summary of these formative years see Shaw, California Law Review, X, No. 4, pp. 443-52.

miners were trespassers. In an attempt to allay the fears of the miners and protect their operations lest the government exercise its rights, the California Supreme Court held that by its very acquiescence the government had "conferred" a full right to the appropriator, a right which could not be withdrawn.[44]

With the approach of the Civil War and the conflict between states' rights and federal rights, protection of the latter became a paramount question. The California court now retreated and held that its previous assertion had no basis in law and that the government's acquiescence did not confer a "positive right" to the trespassers on the public domain.[45]

Reversal was bitterly denounced and the state legislature passed a resolution demanding Congressional protection for the miners.[46] Senator William Gwin

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[44]In the first such ruling, Irwin v. Phillips, 5 Calif. 140, 146, the court said a right with all the force of "res judicata." In Conger v. Weaver, 6 Calif. 548, 558 (1856), the court said "a vested right which cannot be taken away."

[45]Boggs v. Merced Mining Co., 14 Calif. 279, 374 (1859).

[46]While minerals were the primary concern of the resolution, water was directly connected. The resolution declared that ". . . it would be a great grievance and an outrageous violation of free government, if the right of property in the mineral lands of this State were held by people at the will of the federal power." The text is quoted in full in Gregory Yale, Legal Titles to Mining Claims and Water Rights in California, Under the Mining

responded with the necessary proposal, but it was defeated. The outbreak of the war then eclipsed the issue--temporarily.

Following Appomattox a bill introduced in Congress sent a wave of fear through western mining regions. Upon the suggestion of Secretary of the Treasury Hugh McCulloch, it was proposed that the miners be dispossessed and the minerals sold to pay the war debt. The proposal was enthusiastically supported throughout the East, but western interests rallied behind the lead of Senator William M. Stewart of Nevada and secured passage of a bill embodying a counterproposal confirming the titles of the miners and the appropriators.[47]

Primarily a mining law declaring the public domain to be "free and open to exploration and occupation," this Act of 1866 contained a section on waters which provided that:

> Whenever, by priority of possession, rights to the use of water for mining, agricultural, manufacturing or other purposes, have vested and accrued, and the same are recognized and acknowledged by the local customs, laws and decisions of courts, the possessors and owners of such vested rights shall be

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Law of Congress, of July, 1866 (New York, 1867), pp. 346-47. See also Wiel, Water Rights, I, 96-97, for a discussion of events.

[47]Yale, pp. 10-12. Yale felt that the bill was the "most important, so far as California is concerned, that has ever been passed by Congress." He also wrote that "the good people of California" had a much narrower "escape from entire confiscation" than they ever realized.

maintained and protected . . . .[48]

After eighteen years, the United States Congress had confirmed the customs of the miners in appropriating water on the public domain. No longer were the miners even technically trespassers: they were lawful occupants.[49] Then, four years later, the rights of appropriators were further enhanced. Congress provided that anyone acquiring title to part of the public domain by patent, pre-emption, or homestead, did so subject to any appropriative water rights that had "vested and accrued" to others under the Act of 1866.[50]

Soon the California legislature followed the Congressional lead. In the Civil Code of 1872 the doctrine of appropriation was specifically incorporated into the statutory law of the state. In thirteen brief sections, the statute applied the miners' customs to the acquisition of rights to the beneficial use of "water flowing in a

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[48]14 U. S. Statutes at Large, 253, Section 9 (July 26, 1866). Full title: An Act Granting Right of Way to Ditch and Canal Owners over the Public Lands, and for other Purposes.

[49]The court discussed the act in Lux v. Haggin, 69 Calif. 255, 338-39. In Ely v. Ferguson, 91 Calif. 187, 188-90 (1891), the court traced the title to an appropriative claim originally made on unsurveyed public land. In view of the Act of 1866, the court held the appropriator "was not a trespasser on the land, but a rightful occupant."

[50]16 U. S. Statutes at Large, 281, Sec. 17 (July 9, 1870).

river or stream or down a canyon or ravine." It continued the tradition of "first in time, first in right" as between appropriators. It also required the posting and recording of notices indicating diversionary site, amount of water claimed, and place and purpose of intended use.

The passing years had seen a mounting demand for water, and the provisions of the Code were designed to facilitate control of the question of priority in the appropriation of the state's still unappropriated waters.[51] The court, however, restricted the application of the statute to public land. The court held that title to water on private land must be obtained in some other manner, such as by purchase or by grant.[52] Finally, in

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[51]California, Civil Code, (Sacramento, 1872), Title VIII, Sections 1410-1422, pp. 268-70 (March 21, 1872). It was not necessary to comply with the provisions of the Code. Water could still be appropriated in the traditional manner, with full rights, by diversion and application to a beneficial use. Compliance, however, gave the claimant the benefit of the doctrine of relation (sec. 1418). Under this doctrine, as between two appropriators, one complying with the Code and one not, the statutory appropriation would take precedence over the nonstatutory if the latter were not completed at the time the notice was posted in conformance with the Code. For a discussion of the doctrine of relation and the relevant court decisions see Hutchins, Law of California Water, pp. 112-16.

[52]Palmer v. Railroad Commission, 167 Calif. 163, 172-73 (1914). In Santa Cruz v. Enright, 95 Calif. 105, 113 (1892), the court said that if there was a question whether appropriation had occurred on private or public land, it was up to the appropriator to show that he was claiming water on public land in order to establish his right.

1907, thirty-five years after enactment, the court ruled that the provisions of the Code could be applied to any unappropriated water in which no superior rights or interests were claimed.[53]

For over forty years the brief statute of 1872 remained in effect, representing practically all of the statutory law on appropriation. Even when superseded in December 1914, its fundamental principles continued without material alteration in the new Water Commission Act.

The Riparian Doctrine

The intervening forty years were not peaceful ones in the development of California's water law. While the doctrine of prior appropriation was emerging in the gold fields, occasional reference had been made to another doctrine of water rights whose antecedents stretched back further than Coloma, antedating even the pueblo of Los Angeles. The Civil Code itself paid homage to these water rights which derived from the common law and from earlier traditions in the Roman law. This was the doctrine of riparian rights. Section 1422 of the Code had affirmed: "The rights of riparian proprietors are not affected by the provisions of this title." In retrospect one can see that this declaration was an ominous harbinger of the next

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[53] Duckworth v. Watsonville Water and Light Co., 150 Calif. 520, 530 (1907).

fifty-six years; it portended the next stage in the development of the state's water rights.

Before California had officially become the thirty-first state, its legislature passed a statute providing that "The common law of England, so far as it is not repugnant to or inconsistent with the Constitution of the United States, or the Constitution or laws of the State, is the rule of decision in all the courts in this State."[54] Although many legislators were unaware that the common law included the riparian doctrine of water rights,[55] the California Supreme Court was not thus benighted. When the appropriate occasion arose, it applied this doctrine to the definition of water rights in the state.

The riparian doctrine of the English common law vested owners of land adjoining a watercourse with certain rights in the water. The rights were enjoyed solely because of the contiguity of the land to the water, and, being vested in the ownership of the land, they could not generally be lost by nonuse. One riparian user could not acquire a priority over other riparian owners who wished to use water at a later date; the rights of all were

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[54]California, Legislature, Statutes of California Passed at the First Session of the Legislature (San Jose, 1850), p. 219 (April 13, 1850).

[55]Walton Bean, California: An Interpretive History (San Francisco, 1968), p. 278.

viewed as coequal.[56]

Further, the common law tradition placed considerable emphasis on beneficial non-consumptive uses, such as power for milling. Each riparian owner was entitled to the undiminished and unpolluted flow of the stream, with one exception: each was entitled to take as much water as necessary for certain "natural" uses like domestic purposes and watering of livestock. Any substantial diversion of a stream for a consumptive or "artificial" use, such as irrigation, was not contemplated and would have been a violation of the rights of other riparian owners.

Obviously, the riparian doctrine was the antithesis of the appropriative doctrine, which recognized that a person could acquire a right to as much as the full flow of a stream for any beneficial purpose. The state Supreme Court termed these two inherently conflicting doctrines--riparian and appropriative--incapable of "co-existence."[57] Yet, coexist they did, producing forty years of warfare over water rights and costing the state untold millions of dollars both directly in lawsuits and indirectly in preventing the development and use of its waters.

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[56]This is an important distinction between the riparian doctrine and the appropriative doctrine, in which priority was a cardinal principle.

[57]Lux v. Haggin, 69 Calif. 255, 371.

The conflict did not begin immediately following the adoption of the common law. In fact, a belief that the riparian doctrine had been abrogated quickly spread when the legislature recognized the miners' customs in 1851.[58] Further, it was widely argued that the riparian doctrine was inappropriate for California's semiarid conditions. This sentiment was expressed even by the state Supreme Court, which had sanctioned appropriative practices.[59]

On the other hand, an astute observer could have seen considerable contrary evidence. The state Supreme Court was applying the common law as the "rule of decision" in settling some disputes over water rights. There were no specific common law precedents adjudicating conflicts between miners on the public domain; so, the court simply applied the common law by analogy. In its first case, the court held that, because the common law allowed a reasonable use of water during its passage over the land, an

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[58] Elwood Mead, Irrigation Institutions (New York, 1910), p. 193; Shaw, California Law Review, X, No. 6, p. 453.

[59] In Crandall v. Woods, 8 Calif. 136, 142 (1857), the court quoted favorably from Starr v. Child, 20 Wend, 149, regarding the common law: " . . . no doctrine is better settled than that such portions of the law of England, as are not adapted to our conditions, form no part of the law of this state. This exception includes . . . such as are framed with special reference to the physical condition of a country differing widely from our own."

appropriator could divert a stream and apply it similarly.[60] As early as 1857, an appropriator operating a claim on riparian public land was held to have rights equivalent to a riparian landowner; the court said he could assert a riparian right as against a subsequent appropriator of water from the same stream.[61]

More ominous references followed. The court held that appropriators were to be protected only "where no riparian rights intervened."[62] Among riparian owners, rights were not impaired by a long-continued failure to use water.[63] Then, in 1865, a case involving two riparian

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[60] Eddy v. Simpson, 3 Calif. 249. This case is discussed in Shaw, California Law Review, X, No. 6, pp. 447-48.

One favorite common law doctrine was presumption. Because the United States had failed to assert its riparian rights on the public domain, and the state had encouraged the appropriation of waters thereon, it was presumed that anyone who wished to exercise the privilege of appropriating water was licensed by the state to do so, providing only that the prior rights of others were not infringed. See Hutchins, Law of California Water, p. 46.

[61] Crandall v. Woods, 8 Calif. 136, 143 (1857). In upholding riparian rights, the court referred to this decision in Lux v. Haggin, 69 Calif. 255, 357.

[62] Conger v. Weaver, 6 Calif. 548, 588 (1856).

[63] Kelly v. Natoma Water Co., 6 Calif. 105, 108 (1856). This case seems to indicate the disposition of the court to follow this line of reasoning. It held that actual appropriation was the test of priority in claims to use water except those rights which were dependent on the land through which the stream flowed (riparian).

proprietors was settled solely on the basis of their common-law rights.[64]

An observer also might have noticed other changes, particularly in the economic base of the state. At the time, litigation over water rights had been confined largely to miners' uses because mining was the state's paramount industry. Use of water for irrigation was, as yet, of little relative importance. The rich alluvial soils of California's broad valleys, which subsequently helped to make of her the nation's leading agricultural producer, were then used primarily for cattle grazing and wheat farming. Neither required irrigation. Some irrigation was performed, particularly for fruits like grapes and oranges. Yet, the relative rights of riparian owners vis-a-vis appropriators had not been significant because in general there had been sufficient water for these limited enterprises.[65]

During the 1870's and 80's, conditions began to

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[64] Ferrea v. Knipe, 28 Calif. 340, 343-45 (1865).

[65] Shaw, California Law Review, X, No. 6 pp. 452-53. In Los Angeles County, William Wolfskill had a large number of orange trees, some 1,000 bearing apple trees, and 45,000 grape vines under irrigation by 1856. By 1860, a total of 2,000,000 grape vines were being irrigated in Los Angeles and San Bernardino counties. Some irrigation was also practiced near Sacramento during the 1850's. By 1867, Los Angeles and Yolo counties contained approximately forty-four percent of the state's total irrigated acreage--10,000 acres in Los Angeles, 21,000 acres in Yolo. See Gilbert C. Fite, The Farmers Frontier, 1865-1900 (New York, 1966), pp. 167-68.

change. Public lands were bought and homesteaded; many small farms, ranches, orchards, and towns began to spring up. Huge land holdings also appeared as the state improvidently disposed of its nine million acre patrimony from the federal government.[66] Many of the richest bottom lands were engrossed through abuse or distortion of the Swamp Land Act. One such large ranch was that of Henry Miller and Charles Lux. They had acquired over 100 miles of reputed "swamp and overflow" land along both banks of the San Joaquin River. Through the development of such land holdings, both large and small, the number of irrigated acres increased from a mere 60,000 in 1870 to over 300,000 by 1880.[67]

Gradually the dominant position of the mining industry, which had initially brought about the departure from the common law of riparian rights, began to decline. The economic base of the state slowly shifted as California increasingly assumed a settled agricultural-commercial appearance. This change increased the importance of the right of riparian proprietors to use the waters flowing over their lands--riparian rights recognized in the Civil Code. Some of the delegates at the constitutional

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[66]The various land grants are discussed in W. W. Robinson, Land in California (Berkeley and Los Angeles, 1948), pp. 185-97.

[67]Harding, p. 80.

convention in 1879 also recognized the validity of these common law water rights and leveled attacks upon them during the debates, but without success.[68] Had these developments gone unnoticed, and had an observer remained under the impression that riparian rights did not exist in the state, he would have been rudely disabused of the notion in 1886. In that year, by a four to three decision in Lux v. Haggin, the Supreme Court so firmly riveted the doctrine of riparian rights onto the state that it became an inextricable part of the law.[69]

This case was fought between two land-owning giants, the Land and Cattle Company of Miller and Lux and the Kern River Land and Canal Company of James Haggin and Lloyd Tevis. Miller and Lux, in addition to their vast holding along the San Joaquin River, had made a strategic acquisition of a fifty-mile water frontage on the Kern River containing over 100,000 acres. Haggin and Tevis,

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[68]California, Debates and Proceedings of the Constitutional Convention of the State of California, 1878-1879 (Sacramento, 1880), I, 81, 101, 143, 151, 165. The general tenor of the proposed resolutions was that the waters of the state belonged to the people and that they should be made to serve the public interest.

[69]Lux v. Haggin, 69 Calif. 255 (1886). This case was in the courts for almost eight years and became one of the longest opinions ever rendered by the State Supreme Court. The written opinion occupies 200 pages in the California Reports. It has been appropriately termed a treatise on water law; it deals with the water laws not only of California, but also of Spain, Mexico, France, England, and the United States.

holding appropriative rights further upriver near Bakersfield, had begun construction on canals to divert water for irrigation of extensive non-riparian lands in the valley. When the flow of the Kern proved inadequate to meet the demands of both agricultural interests, a bitter conflict over rights ensued in which bloodshed was only narrowly averted.

As riparian owners, Miller and Lux brought suit to enjoin diversions by the upper appropriators. With both sides obtaining the finest legal talent available, the battle lines were clearly drawn; a victory might decide which system of water law would prevail in California. Haggin and Tevis met the requirements of appropriation; they were prior in time to the lower riparian owners, Miller and Lux, and, if appropriative principles triumphed, they would be entitled to divert sufficient water to meet their beneficial needs. If riparian principles dominated, the uses of Miller and Lux would have to be met before any water could be diverted to non-riparian lands.

In the vicinity of Bakersfield, hundreds of small farmers stood to benefit by approval of appropriative rights, as did irrigated agriculture in general. Counsel for Haggin and Tevis argued that riparian rights were incongruous in semiarid California; riparian counsel countered by insisting that the legislative adoption of the common law in 1850 entitled them to the full flow of

the river.[70]

Considering the magnitude of the interests involved, it was a foregone conclusion that, when the Superior Court of Kern County upheld the appropriators, the case would be appealed to the California Supreme Court. With both sides invoking the aid of the press, passions ran high throughout the state as again the case was extensively argued. Finally, on April 26, 1886, after nearly eight years in the courts, the Supreme Court reversed the decision of the lower court. Ruling in favor of Miller and Lux, the court held that the legislature had adopted the common law doctrine of riparian rights in 1850. Contrary to current opinion, statutes authorizing appropriation definitely had not abrogated the common law. Further, the doctrine of appropriation was in no way a part of the common law.[71]

The court emphatically declared that the right of the riparian proprietor to the flow of the stream was "inseparably annexed to the soil and passed with it, not as an easement or appurtenance, but as a part and parcel of it. Use does not create the right, and disuse cannot destroy or suspend it." It was a property right protected

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[70]Edward F. Treadwell describes the conflict well in his biography of Henry Miller, The Cattle King (New York, 1931), pp. 78-94.

[71]Lux v. Haggin, 69 Calif. 255, 361.

by the state's organic law, and the owner could not be divested of it "except on due compensation." The court did go on to modify the traditional restriction to non-consumptive uses, thus deviating from the letter of the common law. It held that the riparian proprietor was entitled to divert water for consumptive purposes such as irrigation. There was a condition, however: the right was subject to the equal right of every other riparian proprietor on the same waters to make a similiar use. In the event of inadequate water to meet all demands, the court would have to adjudicate the interests and make an equitable allocation to each.[72]

While there was an absolute equality among riparian proprietors, the riparian doctrine maintained a rule of absolute inequality between riparian and non-riparian proprietors. According to the common law, the court pointed out, "none but riparian owners may employ or suffer the employment of the water for any purpose.[73]

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[72] Ibid., pp. 390-409. Apportionment was to be made on the basis of such factors as the amount of irrigable land each proprietor owned and the amount of water available in the stream. Among riparian proprietors, priority in time could establish no priority of right; a riparian proprietor could establish a prescriptive right against another riparian owner, however, through five years' continuous adverse use. (Adverse use is described below, p. 123.) For a complete discussion of apportionment among riparian owners see Wiel, Water Rights, I, 820-26, and Hutchins, Water Rights, pp. 218-26.

[73] Ibid., p. 394.

Any diminution of the flow of waters over their lands without their consent was an actionable injury.

The appropriative principle was not completely rejected; it was simply confined to the public lands where it had the sanction of the courts and the consent of Congress. Riparian lands that passed into private ownership, however, carried with them full riparian rights which, unless expressly "reserved from the grant," were superior to the rights of later appropriators.[74]

The litigants in Lux v. Haggin soon resolved their differences. Although the court had awarded the full flow of the Kern River to the former, it was more water than he and his partner needed. In return for the construction of a reservoir, they allotted their former antagonists two-thirds of the waters.[75]

The hornet's nest stirred up throughout the state by the decision was not so readily quieted. Anti-riparian organizations were formed to campaign against the doctrine, and the press flaunted the injustice of the decision for California. It was pointed out that England, whence the common law had been introduced, was blessed with a moist climate; she had a luxurious natural vegetation kept verdant by abundant rain and innumerable springs and

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[74] Ibid., p. 339.

[75] Treadwell, Cattle King, pp. 93-94.

streams.[76] If the soil was to be cultivated there, the major problem was to drain and dispose of excess water, not husband and impound it for irrigation, which, in fact, the common law had not anticipated.

In the eastern United States, climatic conditions similiar to England's existed, so there was little need to alter the common law. In the arid and semiarid regions west of the one hundredth meridian, the common law was an anomaly. California's seasonal rainfall alternated with long dry periods when the only source of water frequently might be a stream threading through a dry valley, supplied by the melting snow pack of the mountains. Under a strict interpretation of the riparian doctrine, such sources of life for the arid countryside could be controlled by and restricted to the use of a relatively few owners, such as Miller and Lux. Without irrigation, surrounding land would be rendered largely valueless.[77]

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[76]Samuel C. Wiel asserts that the riparian doctrine had been introduced into England from the French Code Napoleon only a few years preceding the adoption of the common law by the California legislature. Wiel's investigation showed that the terms "riparian," "riparian proprietor," and "riparian lands" made their first appearance in English Reports in the 1840's. See "Origin and Comparative Development of the Law of Watercourses in the Common Law and in the Civil Law," California Law Review, VI (May 1918), 245-67.

[77]For an example of this viewpoint, see George W. Haight, "Riparian Rights," Overland Monthly, V (June 1885), 561-69. There was, of course, support for the riparian doctrine: see John H. Durst, "Riparian Rights from Another Standpoint," Overland Monthly, VI (July 1885), 10-14.

In retrospect, it seems a strange paradox that in adjudicating this case the court should rely on the common law and apply a doctrine of water rights emphasizing non-consumptive uses. The litigants themselves, and their respective interests, planned to exhaust the river in the most consumptive of all uses--irrigation. Further, without irrigation millions of acres throughout the state were doomed to lie fallow and sterile.[78] Such considerations were, of course, among the factors which prompted the court to modify the common law to permit at least a degree of irrigation on riparian land.[79]

Despite this modification, the decision was bitterly denounced as foreign law fostering greed and favoring monopolies in the state.[80] The court was accused of "legal blindness" in ignoring the needs of the arid region.[81] One editor even suggested that the court

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[78]The "injurious effects" of riparian law to irrigation were pointed out to the state legislature in a report by the State Engineer, William H. Hall, in The Irrigation Question, Memorandum No. 2, California and Australia (Sacramento, 1886), especially pp. 11-14. For an example of hostile sentiment see William P. Aiken, "The Irrigation Question in California," Yale Law Journal, V (February 1896), 122-40.

[79]Kinney refers to this modification as "derogation" of the common law, Treatise, I, 1009-10.

[80]Haight, Overland, Monthly, V, No. 30, p. 569.

[81]George Thomas, The Development of Institutions Under Irrigation (New York, 1920), p. 43.

resign.[82]

As the invective and public clamor mounted, Governor George Stoneman called a special session of the legislature to consider remedial legislation. To the dismay of many, the heated debates produced no new laws. Later, anti-riparian forces secured the repeal of section 1422 of the Civil Code, which had exempted riparian proprietors from Code provisions. Yet, it was an empty victory: the repeal statute itself contained the proviso that it did not "in any way interfere with any rights already vested."[83] Further, the court had previously ruled that riparian owners were protected largely by constitutional principles, not by section 1422 of the Code.[84]

Eventually the decision's continued unpopularity generated enough legislative support to secure passage of an important new statute in the development of California water law. The court had held that it was up to the legislature to decide if the public benefit would be sufficient to warrant depriving riparian owners of their

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[82]Cited in Paul S. Taylor, "Water, Land, and People in the Great Valley," The American West, V, No. 2 (March, 1968), p. 27.

[83]California, Legislature, Statutes of California and Amendments to the Codes Passed at the Twenty-Seventh Session of the Legislature (Sacramento, 1887), p. 114.

[84]Lux v. Haggin, 69 Calif. 255, 396-97. The court held that section 1422 applied only to persons who acquired land from the state, and not from the federal government or private parties.

property through the exercise of eminent domain.[85] In 1887 the legislature responded by passing the Wright Irrigation Act. Culminating years of effort for C. C. Wright, state senator from Modesto, the act authorized the formation of irrigation districts as special units of local government. Fifty or a majority of landowners in an area could secure organization of a district upon approval of the county board of supervisors and two-thirds of the electorate in the affected area. Once organized, the district had the power of eminent domain to obtain water through condemnation of the necessary riparian rights. It could sell bonds and collect taxes to finance the purchase of the involved water rights and to construct the necessary dams, canals, and other irrigation works.[86]

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[85] Ibid., p. 302.

[86] California Statutes, 1887, pp. 29-45. The Wright Act, with the exception of the authority to issue bonds, followed the precedent set by a Utah statute of 1865. Thomas, p. 117.

The Mormons were not only the first Anglo-Americans to develop productive farms in the arid West through irrigation, but they were also the first to devise a system of public control for such irrigation. When they moved into the Salt Lake Basin, Brigham Young reportedly said that there would be no private ownership of this source of life, and the diversion and use of water was made to serve the public benefit. Fite, pp. 178-79. As Utah's laws governing water rights developed, they reflected the physical environment. See Stowell v. Johnson, 7 Utah 215, (1891).

In California, the frequent failures under this first attempt at public control of water for irrigation led to repeated amendment of the Wright Act. In 1897 it was rewritten and became variously known as the Bridgford

Many of the early districts failed for reasons of economics and engineering; yet, despite the failures, in general the act proved "eminently successful."[87] The system it inaugurated became a vital part of the state's agricultural industry; it made water available for non-riparian land which otherwise might have remained undeveloped; and, to a degree, it helped break the monopoly of the riparian owners. It was a minor inroad only, however. In the forty years following Lux v. Haggin, the court repeatedly fortified the rights of the riparian owner at the expense of the appropriator. As a result, a decreasing quantity of water was available to meet the needs of a constantly increasing number of people.

To the court, an appropriator was always a trespasser with respect to any riparian owner on a stream;[88]

Act, the Irrigation Act of 1897, the Wright-Bridgford Act, and the California Irrigation District Act. The only radical changes made in the 1897 act were in the procedures for organization and for incurring indebtedness. For a historical sketch of the operations of the acts and an analysis of the reasons for early district failures, see California, Department of Engineering, Irrigation Districts in California 1887-1915, Bulletin No. 2 (2d ed.; Sacramento, 1917). (This bulletin was prepared by Frank Adams.)

[87] Aiken, Yale Law Journal, V, No. 3, pp. 124-25. After the constitutionality of the act was upheld by the U. S. Supreme Court in Fallbrook Irr. Dist. v. Bradley, 164 U. S. 112 (1896), the number of districts increased. By 1965 there were some 105 irrigation districts serving California agriculture. Rogers & Nichols, II, 60.

[88] Antioch v. Williams Irr. Dist., 188 Calif. 451, 463 (1922).

regardless of whether the riparian owner had used water or not, his rights could not be impaired by a simple appropriation.[89] Nor was a riparian owner under any compulsion to share the waters of a stream in any manner with a non-riparian owner;[90] he could even allow a stream to run waste into the sea merely for the pleasure it afforded him in seeing it flow over his property. In 1909 the court stated the absolute inequality between riparian and non-riparian proprietors with brutal succinctness:

> As against an appropriator who seeks to divert water to non-riparian lands, the riparian owner is entitled to restrain any diversion which will deprive him of the customary flow of water which is or may be beneficial to his land. He is not limited by any measure of reasonableness.[91]

The court went so far as to rule that a riparian owner was entitled to the annual flood flows of the streams entering the San Joaquin Valley. These floods were produced in the Sierra Nevada by the heavy winter rains and the spring melting of the snow pack. Yet the court held riparian rights to be of such paramount superiority that, vis-a-vis an appropriator, the riparian owner was entitled

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[89] Duckworth v. Watsonville Water & Light Co., 158 Calif. 206, 213 (1910).

[90] Pabst v. Finmand, 190 Calif. 124, 132.

[91] Miller and Lux v. Madera Canal and Irr. Co., 155 Calif. 59, 64 (1909). My emphasis.

to the entire flow.[92]

A strict enforcement of such rights could have crippled the rising importance of irrigated agriculture and stunted the state's economic growth. Fortunately conditions were not that stringent. Irrigated acreage actually increased to approximately two and one-half million by 1900 and took a further jump to nearly four and one-quarter million by 1920.[93] Paradoxically, in spite of the superiority of riparian rights, the largest percentage of this land was irrigated on the basis of appropriative rights.

Several factors helped account for this situation. One important reason was Congressional legislation, especially of 1870, which established the superiority of appropriative rights acquired on public lands over

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[92] Ibid., p. 63; Heilbron v. Fowler Switch Canal Co., 75 Calif. 426, 432 (1888); Title Insurance and Trust Co. v. Miller and Lux, 183 Calif. 71, 85 (1920).

As previously indicated (see note 41), court decisions were by no means consistent. For an example of a contrary opinion of the above ruling see Gallatin v. Corning Insurance Co., 163 Calif. 405, 413 (1912). Here the court held that the riparian owner was not entitled to the flood waters and could not enjoin an appropriative diversion of a flood flow which he could not possibly put to a beneficial use. In fact, the court continued, the state "encouraged" the impounding of such waters if it could be done without damage to existing rights.

"Existing rights" were, of course, the question and thus the stumbling block.

[93] Harding, p. 80. The increase is more startling when contrasted to the mere 60,000 acres irrigated in 1870.

riparian rights which accrued at a later date when the lands passed into private ownership.[94] Another contributor was the restriction of riparian rights to the land within the watershed and contiguous to the water supply. When lands were subdivided and sold, riparian rights were always confined to the smallest riparian tract under one title in the chain of title leading to the last or current owner. As some of the larger land holdings were broken up, this restriction resulted in much originally riparian land losing its water rights when it no longer adjoined a stream.[95] Perhaps the most important reason was the loss of riparian rights through an owner's failure to assert them against an upstream appropriator's so-called "adverse diversion" of water. If an appropriator made a diversion continuously for five years without the riparian owner objecting, the latter lost his rights and they became vested in the appropriator through the doctrine known as prescription or adverse use.[96]

These procedures allowed for irrigation of non-riparian lands, despite the bulwarks the courts had

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[94] See above, p. 102.

[95] Rancho Santa Margarita v. Vail, 11 Calif. (2d) 501, 528-29 (1938).

[96] See Shaw, California Law Review, X, No. 6, pp. 455-56, where the effect of prescriptive rights on California's water resources is discussed. Shaw was Chief Justice of the California Supreme Court and a leading jurist on water law.

erected to protect riparian rights. Still, the riparian doctrine created other difficulties for such agencies as municipalities seeking a right to supply water to their community or service area. By ownership of riparian land a municipality could hold riparian rights; but it could use its water only for the benefit of persons living on the riparian lands to which it held title. It could not exercise its right to supply water for customers who were themselves not riparian to the stream. The court had held that a private riparian owner was not entitled to divert water for use on non-riparian land; a municipality held no greater rights. The court ruled that

> The rights in a stream . . . which attach to land because it abuts thereon are not of a political nature, but are private rights. They are vested exclusively and only in the owner of the abutting land and they extend only to the use of the water upon the abutting land and none other.[97]

Cities exercising adjudicated pueblo rights were not burdened with this onerous restriction. As previously indicated, the extensive pueblo right could be exercised not only to supply water to lands non-riparian to the river, but also to furnish water to areas not within the

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[97] Gould v. Stafford, 77 Calif. 66, 68; Antioch v. Williams Irr. Dist., 188 Calif. 451, 456 (1922); in Lux v. Haggin, 69 Calif. 255, 395, the court said, "It is only the tracts of land next to the stream which are the riparian lands and the owners of such tracts are alone riparian owners."

original limits of the city.[98] Such an expansive right stood in direct contrast to the contractive rights of the riparian holders. Public agencies and cities without pueblo rights were able to gain a measure of relief from riparian limitations both through acquisition of prescriptive rights by adverse use and through exercise of the power of eminent domain. The court repeatedly recognized the right to condemn riparian rights for public use.[99]

Here again, even for public agencies, there was a serious limitation to the exercise of such acquired rights. Riparian ownership did not include the right to divert water beyond the watershed of the stream from which it was taken.[100] The court ruled that "land which is not within the watershed of the river is not riparian thereto, and is not entitled, as riparian land, to the use or benefit of the water . . . ."[101] As a consequence, the growth and development of great cities has been made possible principally through the exercise of appropriative

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[98] See above, pp. 89-91.

[99] Of course, proper compensation was required. Lux v. Haggin, 69 Calif. 255, 302.

[100] Chauvet v. Hill, 93 Calif. 407, 410 (1892).

[101] Anaheim Union Water Co. v. Fuller, 150 Calif. 327, 330 (1905). In Bathgate v. Irvine, 126 Calif. 135, 143 (1899), the court expressed the opinion that water could not be removed from the natural watershed of the stream "for any purpose."

rights, not riparian rights.[102] Los Angeles was no exception. When it became apparent to certain members of the city's water department that even the pueblo right to "all the waters" of the Los Angeles River could not indefinitely supply the city's growing needs, the rights to a foreign supplement from the Owens River were acquired on the basis of appropriation.[103]

In spite of these various inroads and legal balances, which tended to check any possible riparian monopoly, adherence to the riparian doctrine thwarted an

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[102] Kinney, I, 1097.

[103] The original notices of appropriation to the surplus waters were posted and copies filed in the courthouse in Independence, California. Photo copies are filed in the Legal Division of the Los Angeles Department of Water and Power.

In view of the nature of riparian rights, most of the intended significance is lost in the reference by such writers as Nadeau and Ostrom to the purchase of miles of frontage on the Owens River by Los Angeles prior to aqueduct construction. The purchases could not bring the important right to export water from the watershed; the lands were needed for a diversion site and to eliminate downstream riparian claims.

As succeeding pages will show, Los Angeles later purchased most of the irrigated farm lands in the valley to secure the appurtenant water rights; but the acquisitions do not detract from the importance of the original appropriations made in 1904 and 1905.

To 1970, when the second aqueduct was completed, the Owens River normally supplied approximately sixty-five percent of the water used by Los Angeles. Of the remainder, some twenty percent came from the Los Angeles River and some fifteen percent from the Colorado River. The percentages varied with the amount of yearly rainfall. Source: William L. Kelly, Supervisor of Public Information and Publication, Public Relations Division, Los Angeles Department of Water and Power.

optimum development of the state's water resources. Studies had indicated the tremendous potential development that could be realized if only the heavy runoffs of the Sierra were captured and stored for later use in the parched valleys below.[104] The studies also revealed the inefficiency of existing methods of appropriation which frequently allowed overlapping and even unused claims.

As a result of these studies, an abortive attempt was made to correct the methods of initiating titles of appropriation during the 1903 session of the legislature. Then with the advent of the Progressive Movement, there was a heightened interest in conservation. In his inaugural address to the legislature in 1911, Governor Hiram Johnson called for a water conservation and development measure. He told the legislature that "the great natural wealth of water in this state had been permitted, under our existing laws and lack of a system, to be misappropriated and to be held to the great disadvantage of its

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[104] B. S. Alexander, George Davidson, and G. H. Mendell, Report of the Board of Commissioners on the Irrigation of the San Joaquin, Tulare, and Sacramento Valleys of the State of California (Washington, 1874, reprinted from House Executive Document 290, 43rd Cong. 1st Sess [Washington, 1874]). This early report estimated that between seven and one-half and twelve million acres could be brought into production, pp. 23-24. See also Elwood Mead, Report of Irrigation Investigations in California, Bulletin No 100, U. S. Department of Agriculture, Office of Experiment Stations, (Washington, 1901), 411 pp. For southern California, specifically San Diego, San Bernardino and Los Angeles counties, see William Hammond Hall, Irrigation in California (Sacramento, 1888).

economical development."[105]

The legislature responded with an act creating the California State Conservation Commission. It was authorized to investigate the water resources of the state and to make recommendations for reforming the laws with a view to promoting a fuller development. After investigation, the commission reported that the vagaries of the state's water law and the inconclusive manner of determining water rights necessitated an excessive amount of adjudication. The result was that the "longest purses" could "indefinitely harrass and annoy those whose purses" were "not so long." The commission emphasized the egregious waste of water under the riparian doctrine. It reported that "enormous quantities of water, which might be, and ought to be put to some beneficial use[,] are permitted to run to waste into the ocean without doing anybody any good . . . ." To correct the situation, the commission recommended that the laws governing water rights be reformulated on the basis of the appropriative doctrine. To ensure the most comprehensive development of the state's waters, it suggested the establishment of a state water commission to administer existing water rights and to regulate effectively the acquisition of

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[105]Johnson's inaugural address is reproduced in Franklin Hichborn, Story of the Session of the California Legislature of 1911 (San Francisco, 1911), Appendix, p. xiv.

new rights.[106]

In the legislature the attempt to embody these recommendations into law was opposed by an outstanding display of pressure group politics. Finally, surmounting enormous resistance, conservationists secured passage of the Water Commission Act and in May, 1913, Governor Johnson signed it into law. Even then the opposition did not rest: a referendum was invoked against the act, causing its suspension until November 1914, when it received the approval of the people.[107]

The act declared all unappropriated waters, and riparian waters not "reasonably needed for useful and beneficial purposes," to be "public waters of the State of California." These waters, including riparian waters not "beneficially" applied within ten consecutive years following passage of the act, were declared subject to appropriation.[108] Supplanting previous procedures, the act outlined orderly and detailed steps of appropriation designed to eliminate both overlapping and unused claims.

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[106]California, Conservation Commission of 1911, Report (Sacramento, 1912), pp. 27-28, 34. The commission's general findings on water are contained on pages 18-42.

[107]The fight against this act is recounted in Franklin Hichborn, Story of the Session of the California Legislature of 1913 (San Francisco, 1913), pp. 137-73.

[108]California, Legislature, Statutes of California Passed at the Fortieth Session of the Legislature (Sacramento, 1913), pp. 1017-18. The act covered surface water only.

In one respect the act departed from the traditional "first in time, first in right:" municipalities wishing to appropriate water for their own domestic purposes were given an absolute preference. In the issuance of permits for appropriation they were to be "considered first in right, irrespective of whether they . . . [had applied] first in time."[109] In general, the act made the doctrine of appropriation the paramount rule of water law in the state. Even riparian rights were equivalent to an appropriative claim because they vested only in the amount of water beneficially used.

Although the act had cleared the hurdles posed in the legislature and by the referendum, it still had to surmount the ultimate fastness of riparian rights in the state, the Supreme Court. Here it foundered. Initially, the court curtailed much of the discretion and authority of the commission to administer water rights and to

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[109] Ibid., p. 1026. Briefly, a prospective appropriator applied to the commission for a permit specifying the source of water, place of diversion, description of the proposed works, purpose of the diversion and the approximate completion date of the project. After issuance of a permit, diversion works had to be completed and the water actually applied to a beneficial purpose before rights accrued.

Under this system, priority was established from date of application. This facilitated giving preference to municipalities because the commission was aware of all actions for appropriations of water.

adjudicate conflicts.[110] Then, a few years later, the court had an opportunity to rule on the most significant portion of the act, the section modifying the character of riparian rights and supplanting their paramountcy with the doctrine of appropriation.

If one considered the tenor of the decisions following Lux v. Haggin, the court's attitude toward the Water Commission Act should have come as no surprise. In addition, Chief Justice Lucien Shaw had clearly spelled out the court's position in an address to the American Bar Association in 1922. Replying to the opponents of the riparian doctrine, he said:

> The obvious answer on the question of policy is that the objection comes too late, that it should have been made to the Legislature in 1850, prior to the enactment of the statute adopting the common law. When that was done, the riparian rights became vested, and thereupon the much more important public policy of protecting the right of private property became paramount and controlling.[111]

The court's explicit opinion of the modification of riparian rights came in 1926. At that time there was widespread discussion of a proposal for the comprehensive development of the state's water resources through a major

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[110] Tulare Water Co. v. State Water Commission, 187 Calif. 533, 543 (1921); Dept. of Public Works v. Superior Court, 197 Calif. 215, 221-22 (1925); Mojave River Irr. Dist. v. Superior Court, 202 Calif. 717, 717, 724-26 (1927).

[111] Shaw, California Law Review, X, No. 6, p. 455.

redistribution of supplies from northern California toward the south.[112] It was estimated that such a developmental program would provide water for the irrigation of millions of additional acres of land; it would also make possible the generation of large amounts of hydroelectric power.[113]

Against this background, the California Supreme Court rendered its judgement in the case of Herminghaus v. Southern California Edison Company, a contest primarily between a riparian proprietor and an appropriator. Herminghaus lands covered some 18,000 acres with twenty miles of frontage along the San Joaquin River. Heavy spring runoffs would raise the level of the river sufficiently to allow a small fraction to overflow the land through numerous sloughs connected to the river. As a result, without any man-made diversionary devices, the land received a limited degree of natural irrigation. In order to receive this irrigation, which was estimated at less than one percent of the maximum flow of the river,

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[112] For distribution of the state's runoff, see above, p. 81.

[113] This proposal was made in 1920 by Robert G. Marshall, Chief Geographer of the U. S. Geological Survey. In a twelve-page pamphlet, Marshall estimated that 12,000,000 acres could be irrigated from waters of the San Joaquin and Sacramento Rivers and would increase state land valuation by $6 billion. The original pamphlet was published by the California State Irrigation Association; it is reproduced in U. S. House of Representatives Committee on Interior and Insular Affairs, Central Valley Project Documents. House Doc. No. 416, 84th Cong., 2nd Sess. (Washington, 1956). Part I, pp. 139-50.

the remaining ninety-nine percent of the flow was wasted.[114]

The Edison Company had acquired some existing small power and storage facilities upstream. It intended to expand these facilities and to impound the flood waters for additional hydroelectric development. The owners of the Herminghaus lands brought suit to enjoin any interference with the flow of the river past their property. In deciding this case, the court made one of its most extreme statements in defense of riparian rights. It said that even though the storing of the flood waters by the appropriators would result in greater benefit to a larger number of people through irrigation or generation of power, the riparian proprietor was entitled to the full flow of the river if that flow was in any way beneficial to his land. As against an appropriator, the court continued, the riparian owner was not limited to any measure of reasonableness; he was entitled to enjoin the construction of any facility which would deprive him of the customary flow of the river.[115]

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[114]Dissenting opinion of Justice Shenk, Herminghaus v. Southern California Edison Co., 200 Calif. 81, 123 (1926).

[115]Herminghaus v. Southern California Edison Co., 200 Calif. 81, 101, 107-11. Although the Edison Company, as a land owner adjoining the river, had certain riparian rights in this case, the court considered the company as an appropriator. This was made clear in Colorado Power Co. v. Pacific Gas and Electric Co., 218 Calif. 559, 564 (1933). In this case the court referred to the Herminghaus

The court then went on to set aside that portion of the Water Commission Act which declared riparian waters subject to appropriation if not beneficially applied for ten consecutive years following passage of the act. Riparian rights were a vested property right, the court declared, and "neither a court nor the legislature has the right to say that because such water may be more beneficially used by others it may be freely taken from them." Moreover, reasonable use, in any particular case, was a subject for judicial inquiry, not legislative mandate.[116]

This decision made it apparent that the court's categorical commitment to the riparian doctrine would absolutely preclude any optimum development of the state's vital water resources. Extensive irrigation, hydroelectric development, and even flood control, depended upon structures to capture flood waters during periods

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decision and said, "Seasonal storage of water for power purposes is not a proper riparian use, but constitutes an appropriation . . . ."

[116] Herminghaus v. Southern California Edison Co., 200 Calif. 81, 101, 117-18. The court did not specifically declare this section, 11, of the act unconstitutional. That this was its intent, however, was made clear in Tulare Irr. Dist. v. Lindsay-Strathmore Irr. Dist., 3 Calif. (2d) 489, 530 (1935). Here the court said, "In so far as the section attempts to declare that ten years' nonuse, without an intervening use, shall constitute an abandonment of the riparian right, we think the section is unconstitutional. This court, on at least three occasions, at least by dicta, has indicated its belief that the section is unconstitutional." The Herminghaus case was the first of the three cases to which the court referred.

of heavy runoff. The court's ruling that riparian proprietors would be held to no degree of reasonableness in the exercise of their rights meant they could enjoin the construction of any such facilities at any time.

Public reaction to the decision was immediate and pronounced; it forced the legislature to take steps to make possible the marshalling of the state's waters to meet the ever increasing needs of the people. The legislature found a solution to the impasse between the conflicting doctrines of water rights in, oddly enough, certain decisions of the Supreme Court itself--decisions following the doctrine of reasonable use.

In adjudicating its first case between appropriators on the public domain, the court had expressed the concept of "reasonable use" of waters as they flowed over the land.[117] In subsequent cases it applied this rule between appropriators. Then, with the advent of a new type of water controversy in California, the court developed this doctrine to its fullest extent, applying it in the adjudication of ground water conflicts.

The tremendous importance of ground water to California was readily illustrated. Of the 30,000,000 acre feet of water Californians were using annually by 1966, some 15,000,000 acre feet came from underground

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[117] Eddy v. Simpson, 3 Calif. 249, 252-53.

basins.[118] While heavy drafting eventually required that such basins be artificially replenished with imported water, originally they were fed only by surface runoff from nearby mountains percolating into underground areas.

In early conflicts over ground waters, the courts applied the common law rule of absolute ownership. According to this rule, the water in the soil belonged to the owner just "like the rocks and minerals found there."[119] An owner could dispose of the minerals as he saw fit; so, the court permitted him to dispose of the waters similiarly. He could absolutely deplete an underground supply either for use on his own land or for export to a distant market. If, as a consequence, his neighbors' wells ran dry, they had no legal recourse against him.[120] Not even riparian owners had been held by the courts to have such infinite rights.

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[118] Albert J. Dolcini, A Critical Appraisal of the Integrated Management of California's Ground and Surface Water Resources, a paper presented at the 1966 Western Resources Conference, Golden, Colorado, July 5, 1966. (Mimeographed.) P. 3. Dolcini was Chief, General Staff, Staff and Services Management, Department of Water Resources, California. He said that California extracted approximately forty percent of the total amount of ground water pumped throughout the entire United States.

[119] Hanson v. McCue, 42 Calif. 203, 309 (1871).

[120] Vineland Irr. Dist. v. Azusa Irrigating Co., 126 Calif. 486, 494, (1899). The court said that other proprietors "injuriously affected cannot be heard to complain."

As subsequent geological studies revealed the nature of ground water movements, the frequent relation between subterranean waters and surface flows was more throughly understood. It then was realized that heavy extractions from a ground water basin could deplete a surface flow as readily as it could deplete a neighboring well. In 1902, the court applied this new knowledge in a conflict between a proprietor using ground water on his overlying land for agricultural purposes and a proprietor exploiting his ground water for distant sale. In reversing its previous position, the court rejected the incongruous application of the common law and said:

> It is obvious . . . that the analogy between the right to remove sand and gravel from the land for sale and to remove and sell percolating water is not perfect. If we suppose a saturated plain, one may remove the sand and gravel from his land without affecting or diminishing the sands and gravel on the lands of his neighbor. If water on his lands is his property, then the water in the soil of his neighbors is their property. But when he drains out and sells the water on his lands, he draws to his land, and also sells, waters which is the property of his neighbors. . . . By pumping out the water from his lands he can perhaps deprive his neighbors of water . . . and . . . render their land valueless. In short, the members of the community . . . have a common interest in the water. It is necessary for all, and it is an anomaly in the law if one person can for his individual profit destroy the community and render the neighborhood uninhabitable.[121]

Finding the common law doctrine of absolute ownership unsuited to the natural conditions of the state in

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[121] Katz v. Walkinshaw, 141 Calif. 116, 140 (1903). My emphasis.

regards to ground water, the court was obliged to lay down a new doctrine for percolating water. This was the doctrine of correlative or coequal rights, to which the court referred as the "doctrine of reasonable use." According to the court, this doctrine afforded "protection to property now existing, and great justification for the attempt to make new developments. It limits the right . . . to such amount of water as may be necessary for some useful purpose . . . ."[122]

The court limited a landowner's right to the quantity of ground water that could be usefully applied to his land and allowed an appropriator to take the surplus. The land owner could not enjoin the appropriator unless his lands were injured by the exportation.[123] Obviously, this was an altogether different relation between an overlying proprietor and an appropriator than that which, according to the court, existed between a riparian proprietor and an appropriator.

In attempting to curtail the extremes to which the riparian doctrine had been extended, the legislature followed the court's precedent. To make it possible for Californians to realize their "common interest" in the state's waters and to preclude "one person" from profiting

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[122] Ibid., pp. 128-34. My emphasis.

[123] Ibid., pp. 135-36. My emphasis. Rights would have to be adjudicated, the court said.

to the exclusion of countless others, the legislature espoused the doctrine of reasonable use and embodied it in a clear and concise proposed constitutional amendment. Submitted to the people in 1928, its adoption made the doctrine of reasonable use applicable to all the waters of the state.[124] Riparian rights were not abolished, but no longer could they be exercised to allow "waste or unreasonable use or unreasonable method of use of water," as permitted by the court in the Herminghaus case.[125]

The amendment was repeatedly attacked and as repeatedly upheld both by the California Supreme Court and the Supreme Court of the United States.[126] In its first ruling, the California Court recognized the conservation intent of the amendment:

> That such purpose is reflected in the language of the amendment is beyond question. Its language is plain and unambiguous. In the main it is an endeavor on the part of the people of the state . . .

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[124]One possible exception to meeting the requirements of the amendment was the waters covered under the provisions of the areas of origin legislation; as late as 1970, however, such provisions had not been tested in the courts to determine whether an exception would, in fact, obtain. For areas of origin, see following pp. 141-42.

[125]California Constitution, article XIV, section 3 (approved by the voters November 6, 1928).

[126]In United States v. Gerlach Live Stock Co., 339 U. S. 725, 751 (1950), the court said the amendment was an attempt to serve the general welfare of the people of the state by preserving both existing doctrines of water law, riparian and appropriative, while concomitantly curbing a wasteful or unreasonable exercise of either.

> to conserve a great natural resource, and thereby render available for beneficial use that portion of the waters of our rivers and streams which, under the old riparian doctrine, was of no substantial benefit to the riparian owner . . . and without which conservation . . . would be wasted and forever lost. It was because this court felt impelled to adhere to the long-established rule of Lux v. Haggin, supra, that a constitutional amendment was made necessary. Upon the adoption of the amendment, it superseded all state laws inconsistent therewith.[127]

Thus, nearly eighty years after statehood and forty years following the decision in Lux v. Haggin, a way was finally found to end the monumental inefficiency and waste which resulted from the legislative adoption of the common law and the judicial application of the riparian doctrine in semiarid California. In Lux v. Haggin the court had said that the appropriative doctrine of the miners and the riparian doctrine of the common law were incapable of coexistence. Yet coexist they did, and under the 1928 amendment, they continued to coexist. As with virtually all other water rights in the state, however, they were limited to that amount of water that was "reasonably required for the beneficial use to be served," and no more.[128]

While the pueblo right included a potential right to more water than might be "reasonably required" to meet

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[127]Gin S. Chow v. Santa Barbara, 217 Calif. 673, 700 (1933).

[128]California Constitution, article XIV, section 3.

the immediate needs of the city, the surplus waters were not wasted. Until such time as they were needed by the city, they were available for use by others. As a consequence, the court held that the pueblo right was not inconsistent with the amendment.[129]

The paramount idea embodied in the amendment, so lamentably slow in taking hold in California, was that, due to the semiarid conditions of the state, "the general welfare required" that the state's water resources "be put to beneficial use to the fullest extent of which they are capable . . . ."[130] Within this framework, however, the riparian tradition was still evident in the protection afforded so-called "counties of origin." Provisions in the Water Code required that reservations of water be made for the future development of counties and of drainage areas with a surplus of water before any of the surplus was exported to other areas in the state. The legislature first made these provisions in 1927 and 1933 at the time steps were being taken to develop the waters flowing into the great Central Valley. While the provisions were extended in subsequent years, the laws were not ex post facto--they established no new property rights in water. They were restricted in application to

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[129] Los Angeles v. Glendale, 23 Calif. (2d) 68, 74-75 (1943).

[130] California Constitution, article XIV, section 3.

those waters in which no private rights had as yet accrued.[131]

In extending the riparian tradition, however, the legislature placed no requirement for diligence or reasonableness in the beneficial use of such water. As a consequence the counties of origin statutes created a measure of preference which the 1928 constitutional amendment sought to remove from riparian proprietors.[132] Yet, once such reservations were made, California's white gold could be transported hundreds of miles from regions of abundance to areas of dearth.

California was a pioneer in the development of western water law. She was the first of the arid and semiarid trans-one hundredth meridian states to adhere simultaneously to the opposing doctrines of riparian and appropriative rights. As a result, the combinations of these two systems was referred to as the "California System."

Ironically, at the same time the California Supreme Court irrevocably attached the riparian doctrine to the state's water law, the Colorado Supreme Court

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[131] Water Code, sections 10505, 11460-463, in Deering's Codes, pp. 564, 584-85.

[132] See n. 124; for a discussion of county of origin statutes, see Hutchins, Law of California Water, pp. 143-45, Harding, pp. 49-50, 212-13, and Rogers and Nichols, I, p. 116.

specifically rejected the riparian doctrine. To allow a riparian owner a right to the flow of a stream even though he made no beneficial use thereof, the Colorado court said, was inapplicable in the semiarid conditions of the state.[133] Colorado was the first of the western states to take this step and base her water laws on the doctrine of appropriation. In consequence, this system became known as the "Colorado Doctrine."

Of the seventeen states lying west of the ninety-fifth meridian, the nine forming the rim of the arid West followed California's lead in retaining the riparian doctrine in some modified form. Before the doctrine was shorn of its unreasonable advantages in these states, they, like California, became the battlegrounds for a greater number of judicial conflicts over water rights than the remaining eight.[134]

Forming the heartland of the arid West, the eight states in the so-called Great American Desert prudently followed Colorado's lead in rejecting the riparian doctrine as inapplicable to an area so different from humid England.[135] The Utah Supreme Court succinctly expressed the

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[133] Coffin v. Left Hand Ditch Co. 6 Colo 443, 447 (1882).

[134] The states are: California, Oregon, Washington, on the west; North Dakota, South Dakota, Nebraska, Kansas, Oklahoma, Texas, to the east.

[135] These states are: Arizona, Nevada, Utah, Idaho,

riparian inaptness for the arid region when it said: "had [the riparian doctrine] been recognized in this Territory, it would still be a desert."[136] The eight states adhering to the Colorado Doctrine were spared the surfeit of conflicts over water rights so characteristic in the states following the California Doctrine.

In adopting the common law as the rule of decision in the state courts, the California legislature excepted its application when it was "repugnant to or inconsistent with" the laws of the state. If the legislature had possessed the prescience also to have excepted the doctrine's application when it was "repugnant to or inconsistent with" the geographic conditions of the state, California might have been spared a portion of the long costly struggle in shaping its water law.

Along with western water law, California was also a pioneer in the development of major water resource programs. The marshalling of resources for agricultural purposes was expressed during the 1930's in the Central Valley Project; during the 1960's the comprehensive California Water Plan for both agricultural and domestic uses was inaugurated. This maximal development of the state's waters, which the 1928 amendment made possible,

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Montana, Wyoming, Colorado, New Mexico.

[136] Stowell v. Johnson, 7 Utah 215, 225 (1891).

was portended by the City of Los Angeles in its Owens River Aqueduct.

Chapter IV

Development of the Recreation Industry in Owens River Valley

Dry ditches
In a bleaching land
A broken pane
A swinging door
And out upon
A withered field
Where blue blossoms
Once nodded in the sun
A rusted plow
Deep furrowed
In the crusted sand.[1]

The bittersweet sentiment expressed in these lines was the poignant reflection of many farmers living in the Owens Valley during the late 1920's and early 1930's. The emotion was bittersweet because of unforseen events that struck at the argicultural heart of the valley. At the same time the sentiment was ironic because the lines were penned at a time no one could foresee the shifting tide which would reinfuse the valley with a more vigorous economy than its ebbing agriculture.

That portion of the valley's economy geared to agriculture had been modest and, as previously explained, irrigation dependent. Then, during the 1920's circumstances virtually eliminated even the nominal role of

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[1]Marie Louise and Will C. Parcher, "Dry Ditches," title poem in Dry Ditches (Bishop, 1934), p. 2.

farming.

Despite the general economic prosperity of the decade, agriculture everywhere had skidded into a depression shortly after the First World War. Throughout the United States farmers were faced with controlled production and rising prices for the industrial commodities they purchased but with over production, waning markets, and falling prices for their own products. By the outbreak of the Second World War when revived demand renewed prosperity for American agriculture, countless farmers had left their fields in search of other occupations.

The full impact of the depression was never felt in the Owens Valley. Before the economic dislocation could run its course, valley farmers were engulfed by a more overwhelming event. Out of a mushrooming need for water, Los Angeles began purchasing irrigated farms and diverting the water into the Los Angeles Aqueduct for delivery to the city's domestic supply system. As more and more land was purchased, irrigation ditches dried, farms withered, and adjoining portions of the valley reverted to their former desert condition.

"The Bristles on the Pork"

Preliminary work on the aqueduct had begun in 1906 and 1907 when the first surveyers entered the valley. Marking their trail with stakes fifty feet apart, crews eventually laid out over 800 miles of possible routes for

the water course that was to carry 260,000,000 gallons daily. Originally the adopted route called for the aqueduct to toe the foothills of the Sierra from Owens Valley to the vicinity of Mojave. From Mojave the survey line proceeded almost directly south crossing the Antelope Valley by way of Lancaster and Palmdale; it then burrowed through the San Gabriel mountains in two six-mile tunnels to a terminal reservoir in Big Tejunga Canyon adjacent to San Fernando Valley.

As finally approved, however, the route was shifted to the west from Mojave southward so that the course continued to follow the contour of the mountains, skirted the Antelope Valley, and entered the San Fernando Valley by way of San Francisquito Canyon. The westward alignment was made after a board of disinterested consulting engineers spent one month reviewing the proposed route and recommended the change to take advantage of a greater potential for hydroelectric generation through San Francisquito Canyon.

The total fall of the aqueduct from Owens Valley to San Fernando Valley was 3,200 feet, permitting an all gravity canal. Routing the aqueduct through San Francisquito Canyon had the advantage of three power drops aggregating 1842 feet where generating plants could be installed. Additionally, the realignment shortened the route by twenty miles, eliminated the two six-mile tunnels

beneath the San Gabriels--substituting one five-mile tunnel near Elizabeth Lake--and reduced construction costs by $568,000.[2]

The construction plan of the aqueduct began with an open canal leading from a headgate on the Owens River thirty-five miles north of the lake to a regulating reservoir on the ancient river course at Haiwee, seven miles south of Owens Lake. This sixty-mile section had a capacity of 900 cubic second feet, equal to the mean June flood of the river at the intake. Haiwee Reservoir, with a storage area of 63,800 acre feet, was to accomodate the fluctuating flow of the river while providing a constant 400 cubic second foot flow into the aqueduct to the south. From Hawiee to Fairmont Reservoir, just north of San Fransquito Canyon, there were 170 miles of covered conduits, flumes, tunnels, and steel siphons. At Fairmont

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[2]City of Los Angeles, Department of Public Works, Third Annual Report of the Bureau of the Los Angeles Aqueduct (Los Angeles, 1908), pp. 25-26; City of Los Angeles, Department of Public Works, Los Angeles Aqueduct, First Annual Report of the Chief Engineer of the Los Angeles Aqueduct to the Board of Public Works, March 15th, 1907 (Los Angeles, 1907), pp. 50-52; City of Los Angeles, Aqueduct Investigation Board, Report of the Aqueduct Investigation Board to the City Council of Los Angeles (Los Angeles, 1912), pp. 90, 95.

The consulting engineers were brought in at the urging of eastern bond purchasers. The engineers were John R. Freeman, James D. Schuyler, and Frederick P. Stearns. Joseph B. Lippincott, "William Mulholland--Engineer, Pioneer, Raconteur," Civil Engineering, II, No. 3 (March, 1951), p. 162.

the water was to be collected and regulated for delivery through the five-mile Elizabeth Lake Tunnel to the power drops in San Francisquito Canyon. Finally, there was a series of short tunnels and siphons to the terminal Van Norman Reservoir in San Fernando Valley. In all, the water would travel 233 miles.

Before construction could begin, extensive preparation had to be made that, in some instances, rivaled work on the ditch itself. For example, the only means of communication into Owens Valley from Mojave was the old wagon road that Nadeau's twenty-mule freighters had followed from the Cerro Gordo. City crews built 225 miles of roads and erected 337 miles of telephone and telegraph lines to provide the necessary communications network. A water supply was another essential requirement, and workmen built reservoirs on Sierra streams and laid 230 miles of mains to carry water to the construction line and the fifty-seven work camps put up to house the crews. Energy to feed power shovels, electric dredges, power hoists, and a multitude of other types of equipment came from three hydroelectric plants constructed on major streams feeding the Owens River.

The need for an estimated 1,500,000 barrels of cement the city answered by building its own cement plant at Tehachapi. A means of transporting the cement, plus some 14,000,000 ton-miles of other freight, was a more

difficult problem. The narrow-guage Carson and Colorado Railroad entered Owens Valley from the north but did not proceed south of Owens Lake; so, it was useless for moving equipment and materials.

After considering various alternatives, Los Angeles decided the least expensive method of transportation would be to construct its own railroad north from the Southern Pacific tracks at Mojave and then sell the line for salvage when the aqueduct was completed. After considerable negotiation, however, the Southern Pacific contracted to build a standard guage road to Lone Pine and haul aqueduct materials, and Los Angeles only had to lay a nine-mile spur into Red Rock Canyon.[3]

One of the last steps in preparation was recruiting the necessary army of laborers. By mid-1908 word had spread through western construction camps of the city's enormous undertaking, and men came in droves seeking jobs. Some of the older men had worked on railroad location during days when the United States Army still guarded advance survey crews against Indian attack. Others were veterans of tunnel work in the Comstock and had experienced the hazards of falling rock and delayed charges of exploding dynamite. A few were fresh out of college, and

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[3]City of Los Angeles, Department of Public Service, Complete Report on Construction of the Los Angeles Aqueduct (Los Angeles, 1916), pp. 82-97.

it was their first important job. Many were just hard-drinking transients from other drill and shovel jobs who were known as "blanket stiffs." But they all were hired: miners, muckers, timbermen, blacksmiths, dry-wall masons, mule skinners, stablemen, swampers, electricians, time keepers, mechanics, engineers, rodmen chainmen, draftsmen, stakepunchers, cooks, laborers, and flunkies.[4] Before the aqueduct was finished, thousands had found employment in the searing summers and freezing winters of the Mojave, with as many as 4,000 on the construction line at one time.[5]

While recruitment and other preparations were still underway, excavation was started on Elizabeth Tunnel. Mulholland believed that digging this tunnel would be the most time-consuming single effort on the entire aqueduct and would therefore determine the completion date of the canal. So, on September 20, 1907, with only 327 men yet employed, ground was broken at the south portal cut and one month-and-a-half later at the north portal heading.

Another full year passed before preparations had

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[4]Frederick C. Cross, "My Days on the Jawbone," Westways, LX, No. 5 (May, 1968), pp. 3-6.

[5]City of Los Angeles, Department of Public Works, Los Angeles Aqueduct, Seventh Annual Report (Los Angeles, 1912), p. 14.

had advanced to a point where general construction could begin. Then starting in October 1908, and as quickly thereafter as the Southern Pacific could lay its tracks, work commenced along the entire aqueduct line.

Through the Owens Valley and the sandy regions immediately to the south, construction was comparatively easy. Although the enormous boulders in such areas as Alabama Hills were difficult to remove, in general the power shovels and dredges readily excavated a ditch for the trailing crews to line with concrete. Conditions changed as the construction line proceeded further south. There the conduit was forced into the severe topography of the eastern face of the Sierra to maintain the gradual fall. When viewing the rugged crags and interminable canyons of the region, the board of consulting engineers had expressed concern about building the aqueduct through the area. One member, John R. Freeman, commented to Mulholland, "That is very rough and difficult country for canal digging."

The quick-witted Mulholland replied, "It is rough on top, but we are not going to dig on top. The aqueduct will go under all that, and when you are underground the character of the surface is negligible. When you buy a piece of pork you don't have to eat the bristles."[6]

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[6]As quoted in Allen Kelley, Historical Sketch of the Los Angeles Aqueduct (Los Angeles, 1913), p. 27.

While Freeman saw the point and gave no evidence of being further concerned, the obstacles of building through the formidable country were by no means reduced. Eventually 111 tunnels had to be driven totaling fifty miles and requiring over six million pounds of blasting powder. Frequently on the steeper slopes the tunnel line was several hundred feet above the base of the mountains. In those instances the heading was reached by side drifts, and excavated material was removed and concrete for lining was brought in through these openings on the mountain face. Despite such difficulties, and those caused by cave-ins and escaping gas, crews set two tunnel-driving records; a hard-rock record of 604 feet in one month while boring Elizabeth Lake Tunnel and a soft-rock record of 1,061 feet in Red Rock Tunnel.[7]

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[7] Complete Report, pp. 142-52.

Despite all precautions, five workmen lost their lives in various underground accidents. It was still an enviable record when compared to New York's Catskill Aqueduct. During the latter's construction, 160 men were killed in underground accidents.

While driving Red Rock Tunnel an amusing incident occurred which helped relieve the tension surrounding rescue efforts for a workman trapped behind tons of fallen rock. Crews eventually succeeded in forcing a two-inch diameter pipe through the cave-in so they could communicate with the trapped miner. When Mulholland learned of the accident, he asked if the miner were still alive. Learning that he was, Mulholland asked how long the miner had been entombed.

"Three days," A. C. Hansen, construction chief of the job, told him.

"Then he must be nearly starved to death," said Mulholland.

One of the most formidable construction jobs on the aqueduct was crossing Jawbone Canyon. The bottom of the ravine was 850 feet below the grade of the conduit, and to carry the water down one canyon wall and up the other, an 8,136 feet steel siphon was designed varying in diameter from seven feet six inches to ten feet. In its stoutest portion on the canyon floor, the steel plate was one and one-eighth inches thick. When completed, the siphon weighed 3,216 tons and was described by engineers as the most outstanding such installation in the United States.

Because of the thickness of the steel, fabrication was performed at an eastern mill. Completed sections thirty-six feet long weighing twenty-six tons were shipped by rail to Cinco Station, the closest siding to Jawbone. The last four miles, from Cinco to the construction site, the gigantic units were carried on special wagons having steel wheels two feet wide so they would not mire in the soft sand. On other divisions of the aqueduct the city had experimented with caterpiller tractors; but because

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"No," replied Hansen, "we have been rolling hard-boiled eggs to him through the pipe."

Upon learning of the miner's relative good fortune, Mulholland asked, "Well, have you been charging him board?"

The humorless Hansen was taken back. "No," he said; "Do you think I ought to?"

Mulholland was not reported as replying, and the miner was rescued the following day.

As quoted in Lippincott, Civil Engineering, II, No. 4, pp. 162-63.

of maintenance problems these new machines were discarded in favor of mules. So, to pull the heavy sections, Harvey A. Van Norman, construction chief for the Jawbone, called for a mule team that dwarfed Remi Nadeau's earlier twenty-mule outfits. Wagons were drawn in tandem by a fifty-two mule hookup using three parallel jerk lines of sixteen mules each with a lead pair at the head and two wheelers at the tongue of the unique arrangement.

Once on site, the sections were placed on concrete piers and connected with rivets which, at the base of the siphon, weighed five pounds each. As the units were installed, additional sections were inched up the sides of the canyon by means of an incline rail and power hoist system until the siphon finally connected to the tunnel openings driven through the canyon walls. By March 1913, the enormous siphon--the last major project on the aqueduct--was complete.

On the morning of May 16, 1913, a full head of water was released from Hawiee Reservoir to flow south and fill Fairmont Reservoir. Mulholland, Van Norman, and other engineers raced ahead to meet the flow at Fairmont; but disappointment awaited them. Word came that the forty-five degree incline tunnels at Sand Canyon, just forty miles south of Hawiee, had exploded under the pressure of the filled aqueduct. Much of one mountainside had collapsed into the ravine and water was pouring out

onto the desert.

Instead of constructing an all-steel siphon through Sand Canyon, as originally planned, engineers had substituted pressure tunnels through what appeared to be solid granite in the canyon walls. These tunnels were connected with a short steel pipe across the canyon floor. Unfortunately, the granite was riddled with undetected minute fractures, and, thus weakened, the canyon wall had shattered when hit by the pressure of the full head of water.[8]

Following the tunnel failure, an 890 foot steel siphon was constructed through the canyon and by October 1913, repairs were complete. Except for a glut in the bond market in mid-1910, which cut funds and forced the city to layoff crews until the market revived in early 1911, the Sand Canyon failure occasioned the only major delay in construction.

With the siphon in, water was turned into the aqueduct again, and, as Fairmont Reservoir filled, civic festivities were planned to celebrate the completion of the canal which was said to rival the Panama Canal. On November 5, at the southern terminus in San Fernando Valley, Mulholland formally presented the new water supply to the mayor and 30,000 assembled Los Angeles citizens

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[8]Complete Report, pp. 192-234.

with one of history's shortest recorded speeches. As the spill gates were opened and the water tumbled down the cascade toward Van Norman Reservoir, Mulholland shouted, "There it is; take it."[9]

Take it Los Angeles did! Until 1920 the aqueduct delivered a mean-annual flow of approximately 260 cubic feet per second.[10] Significantly, this first water was surplus to the valley; had it not been diverted, it would have emptied into the unpotable brine of Owens Lake. When the aqueduct was completed, the valley's irrigated farms were all located above the aqueduct intake, which was thirty-five miles north of Owens Lake. The upstream farmers had unquestioned priority to the water not only because of their location but also under provisions of California water law. No ditches dried and no farms withered because of the diversion of this water. During the 1920's, however, the situation changed completely.

The startling growth of Los Angeles, which had begun during the 1880's, continued beyond all expectations after the turn of the century. Between 1900 and 1920 the

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[9] Los Angeles Times, November 6, 1913. The ceremony was reported as far away as New York. See New York Times, November 5, 1913.

[10] City of Los Angeles, Department of Water and Power, Water Supply Management in Inyo and Mono Counties (Los Angeles, 1966), p. 6.

One cubic foot per second flow is equivalent to 7.48 gallons per second or 646,272 gallons per day.

city's population increased from 102,000 to 576,000. Quickening demand for water generated by this growth was accompanied by another period of drought that lasted from 1917 to 1931. As the runoff from the Los Angeles River watershed declined, the city relied increasingly on the supply from the aqueduct. Unfortunately, the drought extended to the southern Sierra Nevada decreasing runoff there as well. Owens Valley farmers maintained, and often increased, their diversions, and as a result the flow of the river reaching the aqueduct intake was considerably below city demands.

To satisfy its mounting needs, Los Angeles began drilling wells on its own property in the southern portion of the valley. By 1923-24, at that date the driest recorded season in California history,[11] even this supplemental ground water was not sufficient. It was apparent that additional supply could be secured only by acquiring rights further north in the valley. So the city began a concerted effort to purchase water bearing lands for the express purpose of removing them from agricultural production and diverting the surface water into the aqueduct. In addition, the new properties expanded the area for

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[11] Source: David G. Coleman, Operations Chief, California Central Valley Project, as reported in Los Angeles Times, January 7, 1977.

pumping.[12]

By 1927 Los Angeles had purchased approximately eighty percent of valley farm land[13] and drilled nearly 150 wells.[14] Despite the enormous underground reserves, the constant pumping gradually lowered the water table. The drop often interfered with established water rights regarding subirrigation, artesian flow, or pumping depth. As a consequence, litigation plagued the city's pumping activities and land purchases.

When farmers whose property adjoined city wells discovered a drop in their well levels or artesian flows, they obtained court injunctions to halt city extractions. Los Angeles held riparian and appropriative rights within the valley and bought the property from which it was pumping; but, the California Supreme Court ruled that underground water could not be removed from a watershed even by the owner of the overlying property "if such taking . . . [would] deprive of water any lands within

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[12]Los Angeles, Water Supply Management, pp. 5-7.

[13]"Owens Valley Controversy," Outlook, CXLVI, No. 11 (July 13, 1927), p. 342.

[14]California, Legislature, Senate, "Report of the Senate Special Investigating Committee on the Water Situation in Inyo and Mono Counties," Journal of the Senate, 49th Session (Sacramento, 1931), p. 2448.

the basin . . . ."[15]

This feature of California water law, while not fully appreciated at the time, contributed to the misunderstanding and animosity that developed between Owens Valley and Los Angeles both while the city was aggressively purchasing lands and long after it had become the major property owner in the valley. Initially, as farmers brought actions to enjoin its pumping, the city caused the injunctions to be vacated by the simple expedient of buying the affected farms. Yet, the long range implication of the law was clear: since the farm owners possessed claims superior to those of Los Angeles, the farmers could sue to enjoin city pumping any time their underlying water rights were affected. Even if Los Angeles acquired as much as ninety-eight percent of the land in a given area, owners of the remaining two percent conceivably could bring an action to enjoin the city's removal of ground water if the farmers' reasonable use to their own subterranean water was affected.[16]

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[15] San Bernardino v. Riverside, 186 Calif. 7, 15 (1921).

[16] In 1931 the Hillside Water Company brought suit to halt city pumping in the 95,000 acre Bishop-Big Pine Basin. To vacate the injunction, Los Angeles purchased the 6,600 acres and appurtenant water rights belonging to the company. The purchase did not free the city to pump from the basin for long, however. Several farmers whose combined property totaled 640 acres--6.7 percent of the total basin area--then brought suit to enjoin the

Under those circumstances, the city had three options if it wished to continue pumping; it could establish a prescriptive right by an unchallenged adverse use of the water for a five year period; it could condemn the water rights for municipal use, as permitted by the law; or, it could purchase the remaining private property.

Establishing a prescriptive right in the Owens Valley during the 1920's was virtually impossible, and Los Angeles never seriously considered that method. The second option of eminent domain was a proceeding the city consistently sought to avoid, and it condemned no valley lands.[17] The only remaining alternative was to purchase property on the open market, and eventually the city acquired 301,000 acres--nearly ninety-eight percent of all privately owned valley property.[18]

Frequently Los Angeles bought useless or unwanted

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city again. The court held that the farmers were entitled to the underground water supply to support their irrigation efforts and Los Angeles was prohibited from pumping and transporting water out of the basin. Hillside Water Company v. City of Los Angeles, 10 Calif. 2d 677, 685-86 (1938), and Hillside Water Company v. City of Los Angeles, in the Superior Court of the State of California In and For the County of Inyo, No. 3073.

[17]Los Angeles dropped its eminent domain proceedings against the Inyo Farms Company. Vincent Ostrom, Water and Politics (Los Angeles, 1953), p. 132.

[18]Los Angeles, Water Supply Management, p. 48.

land merely to preclude or vacate injunctions against pumping. Because of the great number of actual or threatened suits, the city later resisted efforts to reopen the public domain in the valley. Opening public lands to entry would have vested the settlers with superior water rights and increased the chance of claims against the city. Valley residents considered the opposition an effort to restrain local economic growth; yet, in view of the long trail of litigation, Los Angeles opposed public entry as the only logical method of protecting its water rights.

The Water War

That Los Angeles purchased farms and water rights was small comfort to many residents. Although numerous farmers gladly sold for a price that made them financially independent, others did not want to sell regardless of price.[19] Some agreed to sell only because their farms

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[19]Personal interview with Mr. W. A. "Gus" Cashbaugh, July 17, 1970. Cashbaugh was born and raised in the Owens Valley and lived through the entire period of land purchases. He was a member of the Bishop Creek Association. Los Angeles paid this group of farmers their "asking price" plus an additional $10,000 for distribution among the group. Cashbaugh said that many of his neighbors decided to sell to Los Angeles because they reasoned they could never clear as much profit from working their lands as they could by selling to the city. He remembered one sale in which the farm had been mortgaged for some $30,000. After paying off all debts, the owner reportedly retained a net sum of $40,000.

See also Dorothy Cragen and Genny Schumacher, "History," Deepest Valley, ed. Genny Schumacher

were heavily mortgaged and the rapidly falling crop prices of the era left them unable to meet their obligations.[20] Others reluctantly accepted city offers because they could not bear the increasing costs of maintaining irrigation ditches as their neighbors moved away. There were also those who flatly refused city offers or organized pools collectively to demand higher prices.

In the Bishop area ranchers formed an irrigation district and insisted on eight million dollars for their combined holdings. They emphasized their demands by diverting into their own canals water to which Los Angeles was entitled by the purchase of neighborhood farms. The city first responded by filing suits to halt the illegal

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(San Francisco, 1962), p. 196; and "Owens Valley Controversy," Outlook, p. 342.

[20]In 1920 the value of Inyo County crops, which were produced almost exclusively in the Owens Valley, was $1,503,195. By 1924 crop value was only $791,257. From 1920 to 1925 the number of farms had declined from 521 to 482. During these first years of farm purchases, the properties the city acquired were in the southern, least productive, portion of the valley. Thus, the seven and one-half percent drop in the total number of farms could hardly account for the forty-seven percent decline in crop value. The decrease in crop value must be attributed in large measure to the falling farm price index of the period.

That the depression was taking its toll was further illustrated by the pronounced loss in crop value in Los Angeles County, then the nation's leading producer. During the same period, 1920 to 1924, crop value there dropped from $13,030,137 to $4,748,449. Source: U. S. Department of Commerce, Bureau of the Census, U. S. Census of Agriculture, 1925 (Washington, D. C., 1927), Part III, pp. 44, 474-75.

diversions and then sought to undermine the district by accellerating efforts to purchase farms in the agriculturally important Bishop region. The district countered by resorting to vigilantee-type activities, and farmers who wanted to sell individually were paid threatening midnight visits from armed organization members.

When Los Angeles still refused district demands, the confrontation exploded. On the night of May 21, 1924, a group of farmers placed a heavy charge of dynamite in the aqueduct. Only nominal damage resulted to the conduit, but the blast ignited a small-scale civil war between the two communities.[21] For over two years, sections of the aqueduct, siphons, wells, and various other city properties were dynamited. In November 1924, a band of ranchers even seized the Alabama Gates near Lone Pine and turned the full flow of the aqueduct--290,000 second feet per hour--onto the desert floor for four days before relinquishing control.

The destruction was not intended to prevent water from reaching Los Angeles. At worst the dynamitings only temporarily disrupted the aqueduct's flow. The ranchers' real motive was to gain publicity and sympathy in their fight for higher prices. In that respect they were at

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[21]"California's Little Civil War," Literary Digest, LXXXIII, No. 10 (December 6, 1924), pp. 341-43.

least partially successful as journalists across the nation picked up the story of the water war.[22]

In Los Angeles local newspapers took sides in the war on their editorial pages.[23] The Record claimed that the "truth" about the violence was that it resulted from a "long protest" by valley farmers over the unfair methods Los Angeles used in obtaining farm lands and water rights. The Record insisted the ranchers were not "trying to hold up the city" but were simply "fighting for their homes and the right to exist."[24] The editor warned that the aqueduct might run red with blood before the issues were finally resolved.[25]

The Los Angeles Express was totally unsympathetic with the ranchers. It felt that those few who were responsible for the violence were nothing but "vandals" who should be tried and punished for their crimes.[26]

The Los Angeles Times assumed a moderate position.

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[22]For example, see Ibid; and, "Owens Valley Controversy," Outlook, p. 342.

[23]See Marian L. Ryan, "Los Angeles Newspapers Fight the Water War, 1924-1927," Southern California Quarterly," L, No. 2 (June, 1968), pp. 177-89.

[24]November 20, 21, 1924.

[25]June 24, 1924.

[26]June 24, 1924.

It reported that the farmers were honest, hardworking Americans who felt Los Angeles was "about to strangle out their lives." The paper deplored the lawlessness and insisted there could be no recourse to "dynamite and force" in settling disagreements, but the editor urged the city to be generous in dealing with the farmers.[27]

The Times had been an unflagging supporter of the aqueduct from its inception, and, as though in response to its admonition, the Board of Water Commissioners called for a thorough review of valley land purchases. As a result of the investigation, in November the Commission announced a new policy for land acquisitions. Henceforth, all properties were to be purchased on the basis of an appraisal by a board of three leading valley residents. As the new year began, the number of sales quickly mounted because of the new method of assessment. With the ranchers obtaining the higher prices they apparently had wanted, it appeared as though the valley had brought the city to terms and that the water war was over.[28]

Many farmers who sold arranged to rent their homes and, so, continued to live in the valley. Numerous others moved away. The exodus was reflected in Inyo

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[27]June 24, 1924.

[28]Remi A. Nadeau, The Water Seekers (Garden City, New York, 1950), pp. 94-95; Remi A. Nadeau, From Mission to Modern City (New York, 1960), p. 175.

County's population which dropped from 7,031 to 6,555 between 1920 and 1930.[29] In the Bishop area, where agriculture was concentrated, the loss was most noticeable. There it amounted to twenty percent--from 1,304 people in 1920 to 1,159 by 1930. As residents moved there was a noticeable impact on business activity. Some Bishop merchants reported a loss as high as forty-two percent in their total sales volume.[30] In one extreme case, a hardware store which had sold 135 farming implements in 1920 reportedly sold only two such pieces of equipment in 1926.[31]

Not all businesses were adversely affected. Land sales injected considerable capital into the valley, and many residents bought new automobiles and trucks. Vehicle registrations rose from 1,493 to 2,656 between 1922 and 1926. Bank receipts also went up. After paying off mortgages or other debts, many farmers deposited all or large portions of the remaining money they received from Los Angeles. The total of local bank accounts increased from

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[29]California, California Blue Book, 1958 (Sacramento, 1958), p. 920.

[30]Herman D. Ruth and Associates, The 1990 General Plan for Development, County of Inyo, State of California (Berkeley, 1968). Unpaginated.

[31]Frederick Faulkner, "Owens Valley; Where the Trail of the Wrecker Runs," Sacramento Union, March 28 to April 2, 1927.

$1,931,715 to $2,291,138 during the same years.[32]

Despite such considerations, and the fact that many farmers had wanted to sell, some writers reported that Los Angeles "water looters" were strangling the valley and turning an agricultural Garden of Eden into a desert waste land.[33] Valley merchants whose businesses were declining understandably shared this sentiment and charged that Los Angeles was responsible for the destruction of their lifetime efforts.[34] Galvanizing behind the leadership of Mark and Wilfred Watterson, prominent bankers and businessmen, merchants affected by the population loss demanded that Los Angeles pay reparations totaling $5,500,000 or purchase their town properties for $12,000,000, including reparations. When the city rejected this demand, the water war broke out again.[35]

On May 27, 1927, No-Name Siphon, one of the largest sections of pipe on the aqueduct, was blown out in the most violent attack since hostilities had first occurred just two years before. Next, Big Pine Power

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[32]Graydon Oliver, "Prosperous Condition of Owens Valley District Revealed by Many Vital Statistics," Modern Irrigation, III, No. 8 (August, 1927), p. 27.

[33]Faulkner, Sacramento Union.

[34]Los Angeles Record, November 19, 1924.

[35]Los Angeles Times, March 21, 1927; Los Angeles Record, March 22, 1927.

House was dynamited followed by sixty more feet of pipe. Although Los Angeles sent carloads of police reservists to guard the aqueduct, the explosions continued to echo through the valley.

In Los Angeles the Record again defended the blasts as "acts of men driven to violence by a deep seated sense of injustice . . . ."[36] The Times was no longer sympathetic and branded the dynamiters a "handful of agitators" who were "masquerading as outraged ranchers." The editor felt the acts were deliberate "criminal sabotage" and were "part of a program of extortion directed at the City of Los Angeles."[37] When printed in May 1927, the editor could not have known how accurate his words of exasperation would prove to be.

The editorial exchange between the papers proceeded little further, for, as suddenly as they had resumed, hostilities ended. In August 1927, state bank examiners unexpectedly audited the Watterson banks. The officials discovered that the two brothers had embezzled heavily for several years and had falsified their banking reports to cover the thefts. The disclosure forced the Wattersons to close their banks, bankrupting numerous residents. Savings and funds farmers deposited from the

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[36]May 28, 1927.

[37]May 30, 1927.

sale of their lands were completely lost. In some cases mortgages ranchers had paid off remained uncancelled on the banks books leaving the ranchers liable for the loans. In all, over $2,300,000 were missing or unaccounted for from the five banks and other associated Watterson business interests.[38] By November a jury of their peers and life-long friends had found the two brothers guilty on thirty-six counts of fraud and theft.[39]

As the Watterson activities unfolded, it became apparent to the valley that, in the fight with the city, the brothers had resorted to violence instead of the courts in a desperate effort to keep their illegal financial activities concealed.[40] Unfortunately, its confidence in the two leaders had left the valley financially

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[38]In addition to their five banks, the Wattersons had a hardware and farm equipment business, Watterson Brothers Incorporated, and large interests in the Natural Soda Products Company, the Coso Springs Company, and the Tungsten Products Company--all valley enterprises.

[39]W. A. Chalfant, The Story of Inyo (rev. ed.; Bishop, 1930), pp. 297-98. Chalfant was editor of the Bishop-based Inyo Register.

[40]See editorial of Harry Glasscock in Owens Valley Herald, August 31, 1927.

The editor of the Los Angeles Times wrote: "The propaganda which for years has been directed against the city is now shown not only to have been financed by stolen money, but to have been motivated by the necessity the Wattersons had of covering up their own criminal acts. This poison spring is now dried up and the two communities will be the healthier for it." November 12, 1927.

prostrate, and residents were understandably despondent. At that time there seemed little hope for the future; but, forces were developing then that would result collectively in a new economic base for the valley that was more prosperous than agriculture.

The Land That Beckons

Following the failure of the banks, Los Angeles began buying town properties in addition to farm and ranch land. By 1938, the city owned nearly eighty-eight percent of valley town property.[41] As the total number of purchases grew, the question arose as to how Los Angeles would administer over 300,000 acres of land. That the city acquired the farm lands to ensure its water supply meant it would act to safeguard the watershed initially. Thus, one possibility was simply to "sit tight" and do nothing. Yet removal of the water had unquestionably undermined the valley's agricultural economy, and the city was under enormous pressure to help develop a new source of income. While the primary concern was for valley residents, the city was also interested in generating revenue from its extensive holdings.[42]

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[41] Los Angeles, Water Supply Management, p. 48.

[42] Clarence A. Dykstra, "Owens Valley--A Problem in Regional Planning," Community Builder, I, No. 3 (February, 1928), p. 9.

While the water war was still in progress, the Los Angeles Board of Public Service Commissioners adopted

In an effort to solve the twofold problem in regional planning--safeguarding its water supply and developing new economic avenues--Los Angeles sponsored several studies of the valley. In one respect, the studies confirmed what long experience had shown, that the valley was ideally suited for cattle raising. Since grazing would not jeopardize the water supply, the city started leasing lands to cattle ranchers who, in many instances, were the former owners of the properties.[43]

When the grazing program began, Los Angeles provided virtually no water for irrigation, and thus considerable limited the number of cattle the ranchers could raise. In 1945 the city lifted this restriction and permitted irrigation of pasture and alfalfa crops. The amount of water alloted each lease holder depended upon available runoff. During years of deep snow packs and heavy winter rains, as many as 30,000 acres were irrigated; in dry years as few as 3,000 acres received water, which then was supplied to dairy leases only. Until 1974 such extreme curtailment had been necessary just six times, however, and agriculture had continued as a significant

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a resolution calling for the city to "assist in the maintenance and upbuilding of permanent communities in the valley." As quoted in Intake, I, No. 9 (November, 1924), p. 32.

[43]Dykstra, Community Builder, I, No. 3, p. 11.

adjunct to the valley economy.[44]

The studies also indicated that the region was ideally equipped for development as a recreation area, an economic prospect that time proved far more productive than cattle raising. While it was unforseen at the time, recreation eventually became one of California's leading producers of income, and by the 1960's provided over twenty percent of all jobs throughout the state.[45]

According to the studies, the valley had potential recreational resources greater than Switzerland, while its beauty was said to surpass that found anywhere on earth.[46] The superlative description seemed well justified. The valley was surrounded by a dozen peaks that rose to over

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[44]P. Dean Smith, Agriculture in Inyo and Mono Counties (Bishop, 1968), pp. 5-6. [Smith was Inyo County Farm Advisor.] Los Angeles, Water Supply Management, p. 48; personal interview with Paul Lane, Chief Engineer of Water Works and Assistant Manager, Department of Water and Power, July 1976.

[45]Economic Research Associated, California Tourism Industry: Trends and Investment Opportunities (Los Angeles, 1968), p. 11.

[46]World travelers agreed with this sentiment. For example, Carter N. Harrison, onetime mayor of Chicago, said: "I have crossed the Andes three times by different passes; I have been in the Himalayas, and have seen Everest from Darjeeling; I have tramped in the Pyrenees, and have been in the Alps more times than I can count. But I tell you that in all the world there is nothing so beautiful as the California High Sierra from Yosemite to Whitney." As quoted in Sierra Club Circular, No. 2 (May, 1923), p. 8.

14,000 feet. To its west was the 400 mile granite wall of the Sierra Nevada, highest, most massive mountain chain in the continental United States. With its gentle west slope and precipitous east face, the Sierra resembled a gigantic tidal wave welling up from the floor of the Central Valley. Cresting in 14,495 foot Mount Whitney, the granite wave appeared ready to crash into the nation's deepest valley nearly 11,000 feet below.[47]

Six miles to the east lay the barren Inyo-White Mountains, home of the world's oldest living trees--the 4,000 year old Bristlecone Pines. From atop 14,246 foot White Mountain Peak a traveler could obtain an unmatched view of the valley and the Sierra Backwall. Within the region were hundreds of streams and lakes for fishing, countless areas for hunting and hiking, and virtually limitless possibilities for other types of recreation. Even the limited rainfall was an asset.

Extensive development was necessary before the valley could attract vacationers, such as the construction of roads, the stocking of streams, and the establishment and operation of tourist facilities. Yet, in view of the obstacles, Water and Power Commissioner W. P. Whitsett,

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[47]Bishop Chamber of Commerce, Do It All From Bishop. (Undated pamphlet.); F. E. Matthes, Geologic History of the Yosemite Valley, U. S. Geological Survey Professional Paper 160 (Washington, 1930), p. 9.

who had spent one summer investigating conditions in Switzerland, recommended that Los Angeles take the lead in turning the valley into a vacation land.[48] In January 1927, Harvey A. Van Norman, Assistant Chief Engineer of the Department of Water and Power, announced the city's intention to help promote and finance this course of development.[49] Later that year, when Los Angeles began buying town properties, it was with the express purpose of "establish[ing] and develop[ing] . . . a great park and playground . . ." in the area.[50]

The idea that the Owens Valley might become a gigantic "playground" was not new. Even before construction of the aqueduct, the valley had advertised itself as a scenic wonderland rivaling the Yosemite and Hetch Hetchy Valleys.[51] Then, the wide publicity accompanying the water project centered attention on the valley, and it was

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[48]Dykstra, Community Builder, I, No. 3, p. 10.

[49]John L. VonBlon, "Announcement is Made of City's Plan for the Valley's Development," Los Angeles Times, January 30, 1927.

[50]A. J. Ford, A Resume of the Activities in Connection with the Fixing of Values and Proposed Purchase of the Privately Owned Property Within the Town of Laws, Bishop, Big Pine, Independence and Lone Pine in Owens River Valley by the City of Los Angeles (MS, 1932), p. 19, as quoted in Ostrom, p. 126.

[51]Owens Valley Chamber of Commerce, Inyo the Peerless (Bishop, [ca.] 1908). Unpaginated.

predicted that with advertising and improved transportation southern Californians would vacation there regularly.[52]

Within twenty-five years the prediction was realized; yet, it is questionable whether the response could have occurred much sooner. For the average American, travel and recreation were mid-twentieth century pastimes. As late as 1920 few people had much leisure time. Men commonly worked as many as twelve hours daily six or seven days a week. Equally important, during the 1920's the population was composed almost equally of urban and rural inhabitants. As rural inhabitants made little use of outdoor recreation facilities, particularly the type Owens Valley could offer, the proportions were not conducive to the development of a recreation industry. In the years following 1920 the urban portion gradually increased until by the 1960's it comprised nearly two-thirds of the total population. By the year 2000 the proportion was expected to reach five-sixths.[53]

Even for the occasional southern Californian who had time to visit the Owens Valley in the Twenties, the trip was a grueling two-day ordeal. With the exception

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[52]"Owens River Valley, Paradise of the Sportsman," Touring Topics, X, No. 30 (April, 1918), pp. 12-13.

[53]Marion Clawson, Land and Water for Recreation (Chicago, 1963), p. 3.

of the new rail line out of Mojave, which had been laid to haul construction materials for the aqueduct, the only road was the old wagon trail from the Cerro Gordo. Travelers who braved the interminable miles of ruts were forced to carry water to cool off their boiling radiators and shovels to dig themselves out of the loose sand and pumice in which their narrow-wheeled vehicles frequently mired up to the axles.[54]

As the Twenties progressed, conditions slowly began to change. The California State Legislature was appropriating millions of dollars to complete the highway system called for in the Highway Act of 1909. At the prompting of Los Angeles, in 1925 the state incorporated the Owens Valley road into the system of inter-county routes. Within two years minor improvements made by the state increased the number of southern California visitors reaching the valley by forty-seven percent.[55]

Encouraged by the additional traffic, the Inyo Good Road Club sent a lobbyist to Sacramento who successfully campaigned for further improvements. By 1931, the road had been completely paved from Los Angeles to Bishop.

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[54]For a graphic portrayal of early valley roads, see C. Lorin Ray et al., Inyo 1866-1966 (Bishop, 1966), pp. 86-89; see also Remi Nadeau, City-Makers (Costa Mesa, California, [no publication date]), pp. 63-72.

[55]Los Angeles Times, January 30, 1927.

At the official dedication over 1,000 car loads of enthusiasts from Los Angeles and the Owens Valley met at Red Rock Canyon in the Mojave Desert to celebrate the grand opening of Highway 395.[56]

Within the valley construction had begun on access routes to the numerous tourist attractions. The Public Service Commission recommended that Los Angeles assist in the improvement of these local roads, and the city contributed thousands of dollars to this effort.[57] At the same time, travel-orientated magazines, such as Touring Topics, published articles on the attractive features of the valley.[58] The Department of Water and Power printed brochures on the numerous vacation opportunities,[59] and also encouraged residents to enter tourist-related businesses by leasing, and later selling, town properties for the necessary services and accommodations.[60]

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[56]Cragen and Schumacher, Deepest Valley, p. 198.

[57]Intake, I, No. 9 (November, 1924), p. 32; Los Angeles Times, January 30, 1927.

[58]Touring Topics soon became known as Westways. See particularly Volume XX, for the entire year of 1928.

[59]For example, see City of Los Angeles, Department of Water and Power, Owens Valley Vacation Land is Calling You (1928). (Pamphlet.)

[60]The first sales occurred in August 1939.

In spite of these initial efforts, the number of vacationers visiting the valley, particularly from southern California, was disappointingly small. One reason for the meager response was the limited public knowledge about the area: literature and publicity had not yet reached a sufficiently wide audience. Also, there was only a sparse variety and selection of services available to tourists. Some residents simply failed to appreciate the economic opportunities the developing recreation trade had to offer. More importantly, many people were still embittered by the memories of the water war, and they met vacationers with thinly veiled, and even open, hostility. That was especially true of visitors from Los Angeles who were viewed as water looters responsible for the devastation of the valley--and not as potential customers in an important new trade. As a result of these attitudes, there were few cordial hosts to greet tourists, an important part of a successful recreation enterprise.[61]

The Desert Padre

Then, in 1934, Father John J. Crowley, a former resident returned to the valley and provided the leadership that was necessary to inspire valley people to enter recreation businesses. Ironically, Crowley had returned

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[61]Chalfant, pp. 377-411; Richard Coke Wood, The Owens Valley and the Los Angeles Water Controversy: Owens Valley As I Knew It (Stockton, 1973), pp. 59-63.

on a stretcher and was not expected to live. Within a matter of months, however, he regained his health and again became the same familiar figure on valley streets he had been before moving away in the early 1920's. He then resumed his religious duties, ministering to three different congregations that were separated by 160 miles of desert and mountain roads.

Every Sunday morning at six o'clock, Crowley, who became known as the Desert Padre, said mass in Death Valley; by nine o'clock he had driven 100 miles west across the Inyo Mountains for a second mass at Lone Pine; his concluding service was at eleven o'clock sixty miles further north in Bishop.[62]

As he ministered and traveled throughout the valley, Crowley witnessed the bitterness so many residents felt toward Los Angeles. He recognized that the animosity would have to be eased before the valley could capitalize on its recreational potential, so he began working toward that goal. One of his first successful steps was to enlist the cooperation and support of thirty of the valley's leading citizens, including Will Chalfant, foremost critic of Los Angeles. In 1935 this group organized the Inyo-Mono Association, which was dedicated to promoting the valley's various recreational possibilities.

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[62]Irving Stone, "Desert Padre," Saturday Evening Post, CCXVI, No. 47 (May 20, 1944), pp. 10-11.

Not all residents were ready to cooperate with this goal, and the association met considerable resistance--some of it irrational. The Inyo County Board of Supervisors, for example, charged the Association with insidious and devious motives and with coveting the Board's political powers.[63] And many of Crowley's parishioners grumbled. They criticized him for meddling in economic affairs instead of concentrating on spiritual needs. But Crowley was convinced that spiritual needs could be met more readily if the valley's economic prospects were bright. So, often working sixteen hours a day, he emphasized the recreational opportunities and urged residents to develop them for tourist businesses.

Crowley also wrote articles for the Catholic press and lectured widely on the valley. At every opportunity he assured southern Californians that a new day had arrived and that they were again welcome in the valley. In addition, he performed publicity stunts that few others could have accomplished. With a fine feel for the spectacular, he said mass atop the highest mountain in the United States, Mount Whitney. And he announced an exclusive three a. m. mass for fishermen. He said he felt sorry for Catholics on opening day because they were delayed in hitting the best spots until after eight

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[63] Ibid., p. 105.

o'clock services; but, he invited all fishermen to attend, regardless of religious persuasion.

By three a. m. on May first, his little church in Bishop was jammed. The aisles were clogged with fishing rods, tackle, baskets, and other paraphernalia. Promptly at three, the padre said mass and blessed the expectant congregation--and equipment. Whether it increased the day's catch was never reported, and to Crowley it really didn't matter. He had achieved his purpose when the valley's first "Mass of the Fisher Folk" became a news item.[64]

Another Crowley spectacular was the "Wedding of the Waters." Arguing that it would increase tourist traffic through Owens Valley, he had urged state and federal officials to complete the highway from Death Valley to Lone Pine. Whether it was Crowley's persuasion or the result of a traffic count, officials finally agreed and in 1937 the last eighteen mile link was opened. Crowley then did his best to ensure that traffic expectations would be realized.

From the highest lake in North America, Lake Tulainyo, a Piute Indian filled a ceremonial gourd and ran barefooted down the narrow mountain trail to Whitney

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[64]"Mass of the Fisher Folk," Westways, XXXII, No. 4 (April, 1940), pp. 22-23.

Portal.[65] There he handed the special container to a waiting "pony express rider" who rushed it to the valley floor. Following a brief ceremony, Governor Frank Merriam gave the gourd to a weathered old prospector who headed eastward into the desert along the new highway. After a short distance, the miner relayed the vessel to the driver of an ox-drawn covered wagon carrying descendents of the Donner Party and the Jayhawkers, groups which had come to California with wagon trains over a century earlier.

Later, the gourd was carried aboard a swaying stage coach by Governor Merriam, transferred to the valley's narrow-guage railroad, and then sped along in a new Lincoln automobile. Finally it was delivered to a pilot who flew his small airplane through Death Valley and poured the ceremonial waters of the highest lake into those of North America's lowest "lake," Bad Water, 282 feet below sea level. Following the three-day circuitous journey, the "Wedding of the Waters" was complete.[66]

Publicity from this and from his other antics accomplished Crowley's purpose of attracting attention throughout the state and bringing droves of curious

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[65] "Highest Lake," Sierra Club Bulletin, XXXV, No. 11 (December, 1950), p. 10.

[66] "Wedding of the Waters," Westways, XXIX, No. 12 (December, 1937), p. 16.

tourists. During the summer of 1940, an estimated one million visitors traveled through the valley injecting nearly five million dollars into the local economy.[67] The increasing number of tourists created demands for facilities such as gas stations, sporting goods and hardware stores, motels, and restaurants. As the business opportunities developed, many former residents, who had moved away during the troubled Twenties, began returning. Merchants and businessmen, who at that time insisted that Los Angeles purchase their town properties, wanted to buy them back. In August, 1939, Los Angeles approved the resales and within five years had disposed of nearly fifty percent of its municipal holdings.[68]

Crowley's most important objective was to develop a spirit of cooperation between Owens Valley and Los Angeles, particularly regarding recreational activities. In this effort he had the earnest support of many persons from both areas, and in 1941 they saw their goal symbolized in the dedication of Long Valley Dam. Begun in 1935

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[67] Nadeau, Water Seekers, p. 133. Nadeau does not indicate the source of his figures and they may be a little high. The records of Inyo National Forest indicate that in 1940 some 160,000 persons visited the forest, the main attraction of side-trips in the Owens Valley. Through-traffic, of course, could have been much heavier. (Records supplied by the Office of Forest Supervisor, Inyo National Forest. Mimeographed.)

[68] Intake, XVIII, No. 10 (October, 1941), pp. 3, 13.

as a major storage facility for the aqueduct, the earth-fill dam stood 118 feet high, was 550 feet long and capable of impounding 183,500 acre feet Sierra runoff. At maximum capacity the dam formed a lake that was seven miles long, three miles wide, and had a shore line of twenty-two miles. Its sixty billion gallons of water made it a logical development for fishermen. The Board of Water Commissioners named the new lake in honor of the man who had done most to improve relations between the city and valley, Father Crowley.

On October 19, 1941, as the dam began to fill, over 600 people gathered for the dedication ceremonies. The Desert Padre was not among them, however. During the Spring of 1940, he had gone to San Francisco to attend the funeral of an old friend. As he neared home, on his return, he swerved to avoid hitting a calf in the road and ran straight into the path of an oncoming lumber truck and was killed instantly.[69]

Many of Crowley's associates were at the dedication, one of the most significant of whom was Will Chalfant. His long-standing criticism of Los Angeles made his presence and remarks the best evidence that construction of the dam marked a watershed in the feelings and attitudes between Los Angeles and Owens Valley. The

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[69]Stone, Saturday Evening Post, CCXVI, No. 47, p. 107.

occasion, he said, had a dual purpose: the first was to commemorate the name and memory of Father Crowley, to whom he paid great tribute; the second, he continued, "is an approval of this great undertaking. It is a promise of the end of dissensions and we welcome its implied pledge that hereafter City and eastern Sierra shall work hand in hand for upbuilding."[70] Speakers that followed repeated Chalfant's sentiment; and, in concluding the ceremonies, H. A. Van Norman promised that the city's contribution to "the development of this area as a playground is just beginning."[71]

World War Two temporarily delayed the development, but with the return of peace, the recreation industry mushroomed. Several factors contributed to the postwar increase. The rising standard of living combined with a shorter work week and longer vacation periods enabled an expanding number of people to travel. In addition, constant technological innovation in both automotive

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[70] Inyo Register, October 23, 1941.

[71] Los Angeles Times, October 20 and 21, 1941. At that time, Van Norman was Chief Engineer and General Manager of the Bureau of Water Works and Supply. Along with Van Norman, other speakers attending the ceremonies included, Willsie Martin, pastor of the Wilshire Methodist Church of Los Angeles, who gave the invocation; Douglas Joseph, President of the Inyo-Mono Association, who "congratulated" Los Angeles on the completion of the important reservoir; and, George W. Savage, editor of the Inyo Independent, who reviewed highlights of Crowley's life.

engineering and highway construction greatly increased public mobility.

In California this mobility became a blessing, or a curse, depending upon one's point of view. Yet, for the recreation industry the significance of mobility and rising personal income was readily apparent. By the 1960's, seventy-seven percent of all trips Californians took were for recreational purposes. In Southern California, where there was a long tradition of active participation in outdoor sports and the most unshakeable attachment to automotive transportation, the percentage climbed to an incredible eighty-six percent.[72] Southern Californians willingly drove hundreds of miles even on weekends to participate in outdoor recreational activities. These trips immediately benefited the Owens Valley as eighty percent of all its through-traffic originated in Southern California.[73] A contributing factor to this preponderance was the ease of travel. The valley was only 250 miles

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[72]Outdoor Recreational Resources Review Commission, The Future of Outdoor Recreation in Metropolitan Regions of the United States, Vol. III, The Impact of the Growth of the Los Angeles Metropolitan Region on the Demand for Outdoor Recreation Facilities in Southern California--1976 and 2000 (Washington, 1962), p. 9.

[73]Harry Erlich and P. H. McGauhey, Economic Evaluation of Water, Part II, Jurisdictional Considerations in Water Resources Management, Contribution No. 42, Water Resources Center, University of California (Berkeley, 1964), p. 106.

from Los Angeles, and there were no barriers to cross such as the Sierra or Inyo-Whites, which persons living west or east of the valley faced.[74]

Summer Sports

As postwar traffic grew, the cooperative spirit became increasingly important in developing the valley. At times combined efforts were manifested in small ways. In the vicinity of Lone Pine, for example, the earthquake of 1872 had left a prominent fault which permitted ground water to surface and form a swamp. The stagnant water became a breeding ground for myriads of mosquitoes which plagued residents and tourists alike. When both complained, the Department of Water and Power cleared the growth from the marsh so the Inyo County Health Department could spray the breeding grounds and plant mosquito fish to eliminate the nuisance.[75]

A more significant example of cooperation, which also involved the state, was that which turned the naturally barren Owens Valley into one of the most highly developed and popular fishing areas in the entire western

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[74] In 1964, a poll conducted by the California State Department of Fish and Game found that sixty-six percent of all fishermen in the Inyo-Mono area were from Los Angeles County. Cited in David C. Williams, Bishop: An Analysis of the Economic Impact of a Proposed Freeway Bypass of the City of Bishop (San Bernardino, 1965), p. 89.

[75] Willma Willis, "A Thousand Fish a Day," Westways, XXXIX, No. 7 (July, 1947), p. 21.

United States.[76] Early homesteaders in the valley were disappointed to find that lakes and streams contained no native fish. So they could enjoy this pastime, in 1876 settlers packed in from western Sierra streams the first few trout and planted them in Cottonwood Creek. These fish thrived in their new waters and a few years later some of them were transplanted again into the more accessible streams. Although the trout were not widely distributed, by the 1890's anglers reported individual catches weighing over five pounds.

Then, in 1917, the state constructed the Mount Whitney Fish Hatchery and began large-scale stocking activities throughout the entire region. In addition to planting the easily reached lakes and streams, fingerlings were even packed into the high country by arduous mule-train trips that frequently required over two weeks to complete.[77] By 1945 the tourist traffic was placing

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[76]Chester Chatfield, "Best West Coast Fishing," Outdoor Life, CXXVII, No. 5 (May, 1961), pp. 41-42.

[77]Phillip Pister, "An Invitation to Catch Golden Trout," in Inyo 1866-1966, pp. 73-74.

Native fish in the Owens Valley are thought to have been destroyed by glacial action during the last Ice Age. The only exception to the barren condition was the Kern Plateau on the eastern edge of the Sierra Nevada where Golden Trout survived. Source: "State Takes Extreme Measures to Save Golden Trout," Los Angeles Times, November 21, 1976. (This article deals with the work of Pister who, at the time, had been a fishery biologist for the California State Department of Fish and Game for twenty-four years.)

such heavy demands on fishing facilities that state officials accelerated their stocking activities and also decided to conduct planting experiments from the air. Specially equipped aircraft flown by World War II veterans skimmed mountain peaks to drop thousands of young trout into hundreds of remote lakes. When the fish survived the fall, elated officials launched a full-scale air-stocking program. In 1950, the opening year, 1,583,000 fingerlings were planted in 415 lakes in just over thirty-two hours of flying time--an accomplishment that would have taken months by mule train.[78] With success, greater reliance was placed on air-stocking, and, as fishing continued to grow in popularity, the Mount Whitney Hatchery was expanded into one of the most important such facilities in the state. By the mid-1970's, its annual production had reached twenty-five million trout eggs, four million fingerlings, and fifteen thousand brood fish.

Despite the tremendous production of Whitney Hatchery, demand for stockable size trout exceeded supply; so, Los Angeles provided land and water for the state to construct and operate hatcheries at Black Rock Springs, Fish Springs, and Hot Creek. Each year these facilities

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[78] Pister, Inyo 1866-1966, pp. 73-74; Carl Leutritz, "Raining Fish: Planting by Plane," Progressive Fish Culturist, (January, 1951), as cited in Paul E. Estes, "Recreational Use of the High Sierra, California," (Unpublished Master's thesis, Department of Geography, U.C.L.A., (1953), p. 96.

produced over 200 tons of catchable trout for planting in valley streams and lakes, plus millions of eggs, many of which were air-freighted to other western states. On occasion, eggs were even sent as far away as Spain.[79]

Because it consumed so little water, fishing was an ideal multiple use of the resource, and Los Angeles worked closely with the California State Department of Fish and Game to develop and expand this sport. The city opened over 100 miles of the Owens River to year-round use and required that seventy-five percent of the lands it leased for agricultural purposes be accessible to the public for fishing.[80] In addition, the city developed facilities specifically for fishermen at Lake Crowley as well as at Grant and Pleasant Valley reservoirs.

Of the three areas, Crowley became the overwhelming favorite. From May through July it was one of the most hard-fished lakes in the entire West, attracting some 80,000 fishermen annually. As many as 18,000 boats have been launched there during a single season.[81] A record

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[79]Los Angeles also contributed $25,000 toward the construction of Hot Creek Hatchery. City of Los Angeles, Department of Water and Power, Water Development, Conservation and Recreational Use of Natural Resources (1964), p. 4. (Pamphlet.)

[80]The river was opened from Pleasant Valley to the aqueduct intake. Los Angeles, Water Supply Management, p. 56.

[81]Los Angeles, Conservation and Recreational Use

use of the lake was set on opening weekend in 1961 when 19,000 fishermen caught 72,000 trout weighing a total of 81,000 pounds.[82] Many record catches have been pulled from the reservoir too, including Browns weighing over nineteen pounds.[83] That fishermen were attracted to Crowley in such large numbers was due to the city's extensive advertising and the fact that the state stocked the lake with nearly one-quarter million fish annually--a virtual assurance of good fishing.[84]

Along with fishing, other activities also grew in

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of Natural Resources, p. 4.

[82]Los Angeles, Water Supply Management, p. 56.

[83]Chatfield, Outdoor Life, CXXVII, No. 5, p. 42.

[84]The Los Angeles City Department of Recreation and Parks administered the facility. Its annual advertising budget was $500,000. Erlich and McGauhey, p. 108.

The attraction of valley fishing facilities for southern Californians was illustrated by the area of origin of fishermen:

County of Origin	Percentage of Fishermen
Los Angeles	66
Inyo	5
San Bernardino	5
Orange	5
Kern	4
San Diego	4
Riverside	2
Ventura	2
Santa Barbara	1
Other California	5
Out-of-state	1
	100%

As reported in Williams, p. 89, no. 64.

Eighty percent of anglers at Crowley reportedly returned each year because of the superiority of fishing over other Sierra lakes. Los Angeles Times, May 4, 1973.

popularity. Wildlife was varied and plentiful, and the valley attracted many hunters.[85] Sightseeing became one of the nation's favorite pastimes, and the drive through the valley at the foot of the Sierra Nevada provided spectacular scenery. As roads were completed to surrounding viewpoints, they drew thousands of visitors. Whitney Portal, for example, which was the southern terminus of the John Muir Trail and overlooked much of the valley, has been visited in a single season by persons from forty-six states and twenty-five foreign nations.[86]

Opportunities for hiking and backpacking were virtually unequalled. The valley was adjacent to the largest wilderness region in the United States, 4,500 square miles of Sierra Nevada back-country. Over 3,000 miles of trails wound through the area, including the John Muir Trail which followed the crest of the Sierra 218 miles from Yosemite National Park to Whitney Portal. The Forest Service ensured the hiker of easy entrance into the region by constructing some fifty access trails.[87]

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[85]As with access for fishing, the city requires that seventy-five percent of lands leased for agriculture be kept open to hunting. Los Angeles, Water Supply Management, p. 56.

[86]Paul Bateman, Dorothy Cragen and Genny Schumacher, "Roadsides," in Deepest Valley, p. 31.

[87]U. S. Department of Agriculture, Forest Service, To The Wilderness Traveler (1967). (Unpaginated pamphlet.)

As glider flying grew in popularity, the valley became one of the nation's favorite soaring areas. Flowing west over the Sierra was an air current called the Sierra Wave. Glider pilots from around the world have flown aloft on this wave to set numerous altitude records. And thrill-seeking parachutists leased a drop zone from Los Angeles to permit them to practice their sport.[88]

Many less rigorous activities also were available for the tourists. At the former railroad community of Laws, just north of Bishop, relics were preserved of one of the last narrow-guage passenger trains to regularly operate in the Far West, the Carson and Colorado. The line had terminated in the valley in 1883, running a total distance of only 300 miles from Carson City. As the road served fewer than 6,000 persons, traffic had always been light. Then construction of the standard guage Southern Pacific out of Mojave drew off most of what little business there was to that transcontinental system. So, on April 29, 1960, the little "Slim Princess" made its last run through the Owens Valley and was decommissioned at Laws.[89]

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[88] Inyo 1866-1966, p. 93.

[89] Ibid., pp. 59-65; Bishop Museum and Historical Society, Laws Railroad Museum and Historical Site (1969). (Unpaginated pamphlet.)

Across the yard from the old train station, Father Crowley's original church was reconstructed. When the structure was no longer large enough to seat the growing congregation, it was moved to Law for a museum, and a new church was built to serve Bishop.[90]

Scattered throughout the surrounding region were numerous ghost towns and mining camps such as Bodie, north of Lee Vining, and the famous Cerro Gordo, east of Lone Pine. Near Bishop were Indian petroglyphs of virtually unknown meaning. Or, a tourist could drive to the White Mountains and stand among the gnarled Bristlecone Pines, many of which had withstood the rigors of more than four thousand years.

Other recreations included horseback riding, boaring, water skiing, painting, swimming, camping, golf, tennis, and photography.[91] For all the activities, valley weather was ideal, and outings were seldom ruined by a summer downpour. Only those persons hiking through the backcountry were advised to be prepared for thunder storms.

Winter Sports

Despite their variety, the valley's activities

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[90]The restored church was opened to the public in 1973.

[91]Of the various travel guides on the Owens Valley, two of the best are Sierra Club publications: Schumacher, Deepest Valley; and, Genny Schumacher et al., The Mammoth Lakes Sierra (San Francisco, 1959).

were predominately summer-time attractions. Only a few die-hard enthusiasts took advantage of the miles of streams that were open to year-round fishing. As a result, there was a pronounced seasonal variation in tourist traffic and a marked impact on the local economy. The effect was most noticeable in the Bishop area where the majority of motels, resorts, and tourist-orientated businesses were concentrated.

During the tourist season, May through October, there was a sharp increase in the number of available jobs. At the height of the season, in July, unemployment dropped as low as five percent. In February, however, when tourist traffic was virtually ended, as many as twenty-eight percent of local residents were out of work. By comparison, unemployment for Inyo County as a whole ranged from five percent in July to twelve percent in February.[92] The fluctuation in recreational jobs gradually was reduced as winter sports, especially skiing, grew in popularity and turned recreation into a year-round industry.

As late as the 1920's, public interest in recreational skiing was quite limited. Efforts then were made to attract attention to the sport by such stunts as that

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[92]Hahn, Wise and Associates, General Plan City of Bishop, California, Part I, Economic Survey (San Carlos, California, 1963), p. 25.

of Orland Bartholomew, who announced he would ski alone in mid-winter from Owens Valley to Yosemite. Early Christmas Morning, 1928, he skied out of Lone Pine toward Cottonwood Pass in the High Sierra. Upon reaching Mount Whitney, he turned north along the John Muir Trail, and for three months he survived on supplies from his sixty pound pack and from food caches he had secreted along the trail months before. A total of forty-one nights he made camp on the snow at elevations exceeding 10,000 feet where the temperature fell well below zero. Finally, on April 1, 1929, he arrived at Yosemite, having completed his solitary journey in three months nine days.[93]

Along with publicity, the first few roads were constructed into the areas of heaviest snowfall. The crude snowplows of the era were unable to keep the roads open during the winter, however, so the only runs in operation were a few hastily constructed close to Highway 395 and serviced by homemade tows. As with other recreational developments, the Second World War temporarily stopped all progress, but ski enthusiasts predicted that such valley areas as Mammoth Lakes eventually would have the finest ski runs in the entire state.[94]

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[93]David R. Brower, "Winter Sports," The Sierra Nevada: The Range of Light, ed. Roderick Peattie (New York, 1947), pp. 216-21.

[94]Ibid., p. 248.

When the war ended, construction was started immediately on a number of slopes, resorts, chairlifts, and all-weather roads. Mammoth Lakes was one of the first areas developed, and, true to predictions, it soon had the best runs.[95] Because of its high-speed slopes, it drew larger crowds than any other California facility. In addition, it had an unusually long season which extended a minimum of six months. It was the highest resort in the state, with gondola service available to the very top of Mammoth Mountain, 11,054 feet high. At that elevation skiers normally could begin making runs following the first snows of November and continue on through June. Moreover, many times when skiing was only a memory throughout the rest of the West, sufficient snow was still on the slopes at Mammoth to support diehard enthusiasts as late as July.[96]

Other valley resorts, at June Mountain and China Peak, never attained the same levels of use as Mammoth. Its attraction was such that southern Californians would drive the five hundred mile roundtrip for a single weekend on its slopes. In one instance, a ski addict drove from Santa Barbara to Mammoth Lakes and back, over 600

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[95]"The Skiers West," Sunset, CXXX, No. 2 (February, 1963), p. 71.

[96]Hans Engh, "Surveying the Ski Scene," Westways, LX, No. 12 (December, 1968), p. 4.

miles, sixteen weekends in a row. Leaving immediately after work Friday evening, he arrived at Mammoth at one a. m. the next morning. After skiing all Saturday and Sunday, he drove home Sunday evening, and recovered from his ordeal the following week.[97]

The tremendous postwar growth of skiing was reflected in the use of Mammoth facilities. United States Forest Service figures showed that during 1951 only some 12,000 skiers had used its slopes. By the 1967-68 season, the number had grown to 173,000.[98] During the 1960's, the popularity of skiing mushroomed so rapidly that in the 1967-68 season nearly one-third of all California skiers had taken up the sport only within the preceeding two years.[99] As quickly as new installations were completed,

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[97]Coles Phinizy, "Giant Playground," Sports Illustrated, XIX, No. 7 (August 12, 1963), p. 30.

[98]Mimeographed materials from the Recreation Officer, Inyo National Forest. Unpaginated. These are approximate figures only. The Forest Service used "man-days-use" figures, which for 1951 amounted to 36,590. In 1951, one "man-day-use" was based on an eight hour day. In 1965, the "man-day-use" was based on a twelve hour day, of which there were 346,000 during the 1967-68 skiing season. No total number of "man-days-use" for the entire year was kept.

To obtain the approximate total number of visitors, divide the number of segments comprising the "man day" into the total "man days of use." For an eight hour "man day," the divisor is three; for a twelve hour "man day," the divisor is two. (Explanation provided by the Recreation Officer, Angeles National Forest, Pasadena, California.)

[99]Engh, Westways, LX, No. 12, p. 2.

skiers flocked to use them. So marked was the growth of the crowds, particularly at Mammoth, that in 1973 Forest Service officials expressed concern that it might become necessary to limit the number of skiers using the existing facilities. To accomodate the growing numbers, the Forest Service was considering plans for major new developments at Mammoth Mountain, Sherwin Bowl, Lookout Mountain, and San Joaquin Ridge.[100]

Economic Growth

As skiers and other motorists drove through the valley, they supported the economy through their patronage of local businesses. The average skier, for example, was spending over twenty-five dollars daily.[101] The number and nature of businesses, however, depended on valley geography. In the southern portion, near Big Pine, the abrupt escarpment of the Sierra restricted recreational possibilities. Little room existed even for camping, and the Forest Service maintained only six local campgrounds. The area did serve as an entrance into Sierra high country, and residents there operated a number of pack stations.[102]

North of Big Pine the terrain changed. In the

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[100] Los Angeles Times, April 6, 1973.

[101] Engh, Westways, LX, No. 12, p. 2.

[102] U. S. Department of Agriculture, Forest Service, Campgrounds in the Inyo National Forest (1964). (Mimeographed.)

vicinity of Bishop, and beyond, the mountains were more sloping, were covered with thick forests, and contained numerous lakes and streams. It was the region of Mammoth Mountain and Lake Crowley, and, because it was the destination of most travelers, residents referred to it as the "end of the run." The preponderant number of campgrounds, skiing facilities, resorts, sporting goods stores, and other service-orientated establishments were located there. Fifty percent of Inyo County's total retail sales volume was generated in Bishop alone;[103] and of that volume, the recreation industry was responsible for nearly ninety percent.[104] Some of the businesses gained wide reputations. Schat's Family Bakery was one. It eventually shipped its original Sheepherder Bread to markets throughout the state.[105]

Administration and supervision of the Inyo National Forest also contributed to the valley economy. In 1908, when Los Angeles began major construction on the aqueduct, the forest payroll for July was $599. In 1965, the payroll for July, the peak tourist month, exceeded $86,000; for the entire year, forest employees received

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[103]Hahn, Wise and Associates, p. 31.

[104]Williams, p. ii.

[105]Los Angeles Times, September 23, 1975.

$617,592.[106]

The ski centers and the majority of other recreational developments were located on lands in the Inyo National Forest. The forest was established in 1893 to protect the Owens River watershed and surrounding timber stands. It ran from Owens Lake in the south to Mono Lake in the north and covered 1,891,344 acres in California and Nevada. Although the forest extended over all or parts of seven counties, ninety percent of the recreational activities occurred in the Owens Valley region of Inyo and Mono Counties.[107]

The growth of recreation was reflected in the mounting number of visitors to national forests. While reliable counts were not maintained until after World War Two,[108] existing records indicated that in 1939 approximately 161,000 persons visited Inyo National Forest. During the war years, gas rationing and other travel restrictions kept the numbers relatively constant, but with the end of hostilities, traffic quickly mounted and by 1946 had more than doubled to 462,990. In succeeding years the number of tourists continued to climb

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[106]Iverson, in Inyo 1866-1966, p. 77.

[107]Erlich and McGauhey, p. 106.

[108]Telephone conversation with Recreation Officer, Angeles National Forest, December 16, 1968.

so that by 1966 they totaled 2,155,000--nearly two million more than in 1939.[109] The increased traffic pushed Inyo Forest into fourth place in recreational use among the nation's national forests.[110] By 1969 it accounted for five percent of camping in designated forest areas, twelve percent of wilderness area use, and ten percent of all issued resort permits.[111]

Forest Service and Fish and Game officials expected the growth to continue. Compared to 1960 usage, they anticipated a 76.9 percent increase just in the number of fishermen by 1980.[112] Because of the mounting recreational demands, grazing use of forest lands had to be restricted. The number of local cattle, as well as the sheep that were trucked in from as far distant as Bakersfield, was being reduced. In some instances the

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[109]Mimeographed, handwritten materials from the Recreation Officer, Inyo National Forest, entitled, "Total Use Inyo National Forest." The count began in 1939 and ran through 1967 when there were 1,999,000 visitors, a slight decrease from 1966. The supplied figures were in "man-days-use."

Wayne Iverson, "Millions Visit the National Forest," in Inyo 1866-1966, p. 77, claimed 3,200,000 persons visited the forest in 1965. Iverson did not cite the source of his figures, however, and it is possible he failed to convert "man-days-use" into number of visitors.

[110]Schumacher, Mammoth Lakes Sierra, p. 140.

[111]Los Angeles, Water Supply Management, p. 40.

[112]Williams, p. 89.

stock were redirected to acreage under the Bureau of Land Management.[113]

Although recreation grew into the leading economic activity in the valley, cattle production remained a significant adjunct. In 1920, when agriculture was the mainstay, there were 546 farms with some 25,000 head of cattle. By 1965 the number of farms had declined to 102 while the total number of cattle had increased slightly to 26,000.[114] Yet, in that same year, service stations generated twice as much revenue for the valley as cattle production. In fact, the total annual value of the recreation industry was over 200 percent greater than the combined value of agriculture, mining, and lumbering interests.[115]

To further increase the commanding economic lead of recreation, road construction was pressed. When the war halted building activity, there were 2,112 miles of

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[113] Ruth and Associates, unpaginated.

[114] Ilene Christiansen, "Livestock in Owens Valley," in Inyo 1866-1966, p. 79.

[115] Cragen and Schumacher, Deepest Valley, p. 198. In 1964, Inyo County agricultural production was valued at $1,682,000. Mineral shipments and receipts for 1963 were valued at $11,025,000. In 1960, the value of lumber produced was $900,000. See U. S. Department of Commerce, Bureau of the Census, County and City Data Book, 1967 (Washington, 1967), pp. 40-41, for agriculture and mineral values; lumber value cited by Cragen and Schumacher.

improved roads in Inyo County and 1,265 miles in Mono County. By 1967 the totals had grown to 2,950 and 1,380 in the two counties respectively.[116] The backbone of the local roads was Highway 395, which the state was converting into a four-lane freeway from Los Angeles northward. This construction project was of great interest and importance to the valley as eighty percent of its summer tourists and ninety-five percent of the winter sports enthusiasts were coming from Southern California.[117]

As recreation expanded, the valley's population grew. In 1940 there were 7,625 people living in Inyo County; by 1975 the population was 13,972, an increase attributed almost exclusively to the development of recreation. By 1990 a predicted 400 percent increase in recreational demands was expected to boost further Inyo's population to 26,000.[118] As in the heyday of agriculture, residents concentrated in the Bishop area, where half the total county population resided.[119]

Another indication of the importance of recreation

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[116]California, Blue Book, 1942 (Sacramento, 1942), pp. 429, 497; California, California Statistical Abstract, 1967 (Sacramento, 1967), p. 160

[117]Mimeographed materials from Recreation Officer, Inyo National Forest. Unpaginated.

[118]Ruth and Associates, unpaginated.

[119]Williams, p. ii.

was the amount of land devoted to its use. Inyo County, the second largest in California, covered 10,091 square miles. Nearly half its vast area, forty-nine percent, was desert and virtually unused. Of the fifty-one percent in productive applications, nearly three-quarters, or seventy-four percent, was devoted to recreation. Agriculture still accounted for eleven percent; fourteen percent was reserved for the military; and, the remainder was taken up by roads, airports, and various urban needs.[120]

Recreational growth was reflected also in the rise in personal income. In 1940, total personal income in Inyo County was $6,863,000. In 1950 it was $17,830,000 and had risen to $27,747,000 by 1961. Per capita income for the county in 1961 was $2,372; for Southern California as a whole it was $2,792. Inyo County was thus somewhat lower than the Southern California average; yet, of the ten southern counties, Inyo ranked fifth, following only Los Angeles, Santa Barbara, Imperial, and San Diego.[121]

While the valley enjoyed a competitive level of income, it was sometimes argued that despite its prosperity, the valley would have been more flourishing had

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[120] Ruth and Associates, unpaginated.

[121] California Blue Book, 1942, p. 430; Security First National Bank, Southern California Report, 1965, as cited in Williams, p. 16.

water been available for irrigation and other uses. The criticism overlooked several important considerations and needed qualification. For example, in 1914 Los Angeles took the initiative in obtaining approval for the Clarke Taxation Amendment. This significant law authorized assessment of the city's property in Inyo County. Prior to 1914, government property had been tax-exempt. Passage of the amendment ended the exemption, and thereafter Los Angeles contributed directly to the valley economy through tax payments both on its lands and improvements and on the exported water.

Combining land and water values, Los Angeles paid approximately forty-five percent of the total Inyo County property tax assessment and twenty-five percent of the assessment for Mono County.[122] The arrangement presented a two-fold advantage to the valley governments: first, they added a major contributor to their tax rolls; second, they were free to expend the revenue with little or no consideration to the taxpayer as Los Angeles required virtually no services in return for its tax dollars.

Another qualification was that additional water for irrigation would have been devoted primarily to livestock production. Ranching provided few jobs, so it was questionable that more extensive irrigation would have

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[122]Mimeographed materials from City of Los Angeles, Department of Water and Power.

had an appreciable impact on the economy. The general trend in agriculture since the 1960's supported that conclusion. From all indications, farm life no longer offered the idyllic conditions it purportedly once represented. Diminishing numbers of persons were willing to live on farms, particularly the long-cherished tradition in American history, the 160 acre family farm. From 1960 to 1968 alone, the number of family farms in the United States declined by nearly one million. The byword had become, "Either get big or get out!" Many small farmers chose the latter option. So pronounced was the decline in the number of family farms that predictions were made it would completely disappear and be replaced by corporate-operated farms.[123]

Nowhere was the change more apparent than in California where "agribusiness" accounted for a larger gross farm income than in any other state in the nation. In California the number of farms dropped at a rate of 3,000 each year between 1960 and 1966.[124] Bank of America agricultural officials declared that in California the family farm had become a myth. The bank found that only a few small farmers on strong soils were able to survive

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[123]"Biggest Industry in Trouble," U. S. News and World Report, LXIV, No. 11 (March 11, 1968), pp. 78, 81.

[124]Los Angeles Times, January 20, 1966.

in competition with the corporate farms, and many of them still were not making a profit.[125]

In 1930 the average size farm in California was 224 acres. By 1968 it had grown to 458 acres.[126] Eventually three percent of the state's 90,000-plus farms accounted for approximately two-thirds of the total farm acreage, with some farms incorporating thousands of acres.[127] On the large holdings, diversification and irrigation made farming responsive to the cost-control methods of big business. Even major natural barriers to production could be economically and effectively dealt with under the economies of scale or corporate-size farming.

California's Imperial Valley contained some of the best illustrations. There farmers faced two major obstacles: lack of a natural drainage system in soil formations; and, high salt content of irrigation water imported from the Colorado River. Salinity ranged from one to one and one-quarter tons of mineral per acre foot of water. Because of the valley's incredibly fertile

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[125]"Biggest Industry in Trouble," U. S. News, LXIV, No. 11, p. 81.

[126]Los Angeles Times, June 25, 1968.

[127]Robert W. Durrenberger, Patterns on the Land (Woodland Hills, California, 1965), p. 66.

soil and the nearly year-round growing season, it was profitable for corporate farmers to take the necessary steps to reduce the detrimental effects of these obstacles.

To remove the salt, which accumulated in the soil due to the lack of drainage, farmers constructed artificial drainage systems. Over 12,000 miles of slotted ceramic and concrete pipe were laid three to four feet beneath the valley surface. With water supplied through 4,000 miles of irrigation canals and ditches, farmers were able to flood their lands periodically and leach out the sterilizing salt. Cost of a system ran as much as $300 per acre, plus upkeep. Yet, the profits were commensurate and they helped give the Imperial Valley an annual agricultural production worth well in excess of $200,000,000.[128]

In the Owens Valley it is improbable that the short growing season and granitic soil ever would have justified similiar costly measures to remove the heavy alkali concentrations. For the Owens, nature's bounties were spectacular scenery and unique surroundings. When developed, these natural advantages turned the valley

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[128]Because of its impact on both agriculture and recreation, there has been considerable literature on the salt problem in the Imperial Valley. Concerning agriculture, see, for example, Thomas W. Bush, "Salt Turning the Imperial Valley Bitter," Los Angeles Times, October 20, 1968.

into a recreational wonderland. By 1976 Americans were spending 146 billion dollars annually on recreation and leisure activities, a greater outlay than for national defense or home building. California travelers were spending some $20 per party on one-day outings and well over $100 per party on overnight trips. In an era of rising affluence and leisure time, recreation proved to be the bonanza of the Owens Valley.[129]

With leisure-time expenditures expected to double every eight or nine years, the future seemed even more promising. In metropolitan areas particularly, such as Southern California, demand for outdoor recreational facilities was expanding at a nearly geometric rate. By 1980 overall demand was expected to increase an average of 400 percent beyond the 1960-65 level. Recreation authorities anticipated that the increase in some activities would be far greater: use of camping facilities was expected to go up 727 percent; demand for riding and hiking trails by 615 percent.[130] While the percentage increase in other areas was expected to be less, it was still substantial. The predicted winter sports increase

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[129]"People Are Shelling Out More Than Ever For A Good Time," U. S. News and World Report, LXXXII, No. 7 (February 21, 1977), pp. 40-41.

[130]Between 1973 and 1976, the number of backpackers hiking into National Park Service wilderness areas increased by fifty percent. Ibid., p. 40.

was 198 percent, and fishing 137 percent.[131]

Research data showed that recreational facilities within 500 miles of metropolitan areas were the attractions most heavily frequented by the population centers. That placed the Owens Valley well within acceptable driving range of twelve million people in Southern California, and they were expected to increase their use of Inyo County facilities by 514 percent and those of Mono County by 419 percent between 1965 and 1980.[132]

Among the reasons for the increased demand were the longer paid vacations and rising family incomes that gave people the time and money for spare-time pursuits. Another important factor was the expanded population. Southern California had grown from approximately one million in 1910 to some twelve million by 1970. Coincident to the growth, there was an increasing need for additional water which was supplied both from the California Aqueduct and by a second smaller aqueduct Los Angeles constructed from Haiwee Reservoir. This "second

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[131]Southern California Research Council, Developing the Inland Empire (Los Angeles, 1962), p. 68. Californians displayed a consistently high interest in fishing. In 1972, for example, 26,022,547 fishing licenses were sold throughout the United States. Of that total, 2,261,766 were purchased in California, nearly three-quarters of a million more than in the next leading state, Texas. Los Angeles Times, May 7, 1973.

[132]Southern California Research Council, p. 68; Outdoor Recreation Resources Review Commission, p. 66.

barrel," completed in 1970, had a capacity flow of 210 cubic feet per second. To augment surface runoff, seventy cubic feet per second were to come from the underground basin. The city planned to pump an additional nineteen cubic feet per second to provide a firm supply to 15,000 acres of irrigated land within the valley.[133] As a result of expanded irrigation and the need for water for various recreation areas and wildlife habitats, the city increased the average pumping rate. By 1976, as California entered the worst drought in its history, 315 cubic feet per second was necessary to meet the demands, although the city was limited by the court to drawing 178.5 cubic feet per second pending completion of an environmental impact report.

The pumping renewed the controversy between the city and valley over exports. The issue was reminiscent of the 1920's when the use of wells first interfered with subirrigation and other ground water rights of farmers. The valley's concern was that heavy pumping would so lower the water table that native vegetation depending upon subirrigation would die, turning the valley into a "wasteland." Residents pointed out that high winds

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[133]City of Los Angeles, Department of Water and Power, Final Environmental Impact Report on Increased Pumping of the Owens Valley Groundwater Basin (Los Angeles, 1976), I, Section 2, pp. 2-3: Section 6, p. 7.

occasionally carried alkaline dust aloft from the dry Owens Lake bed. Many felt that if the valley floor were further "dried out," "dustbowl conditions" would result. Some officials charged that increased dust would contribute to respiratory ailments and could even damage foilage on surrounding mountains, particularly the Bristlecone Pines.[134]

In its Environmental Impact Report, Los Angeles stated that as much as twenty-two percent of native vegetation on the valley floor would be significantly changed due to the pumping of 140, or more, cubic feet per second. The most noticeable impact would be to such "moisture-loving" plants as the alkali grasses. It was felt that soil erosion would not be a problem because the grasses would be replaced by such drought-resistant shrubs as creosote bush. That type of vegetation did not depend on subirrigation but could exist on soil moisture stored from regular precipitation. More importantly, the city contended that the winds were neither frequent enough nor of sufficient strength to produce the results the valley feared.[135]

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[134] County of Inyo v. City of Los Angeles, in the Court of Appeal of the State of California, Third Appellate District, Sacramento, No. 13886, October, 1976, pp. 48-54. See also, Los Angeles Times, October 8, 1976 and July 16, 1976.

[135] Los Angeles, Environmental Impact Report, I,

Further, city engineers estimated that during years of normal rainfall the ground water basin was recharged at the rate of nearly 300,000 acre feet annually, more than twice the city's total pumping capacity. Ground water levels had dropped during previous periods of heavy pumping, as in 1930-32 and 1960-62, but had come back up when the heavy extractions ended. So, it was felt permanent damage to vegetation would result only with protracted pumping. Heavy rainfall could permit the revival of grasses, or other forms of vegetation lost during the drought, as the species would continue to grow in the extensive area of subirrigation which extended back for one-quarter mile on either side of the aqueduct.[136]

The valley was unconvinced by the city's arguments and brought suit challenging the adequacy of the environmental report. In September, 1976, in response to the appeal, the court further reduced the pumping rate to 149.56 cubic feet per second. Even this restriction did not satisfy all residents, and on September 15, 1976, like an echo from the past, the Alabama Spillgate was

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Section B, pp. 5-11, Section C, pp. 13-28: II, Section 5, pp. 2-3.

A few of the "moisture-living" plants were slatgrass, wiregrass, giant reed, sedge, spide rush, cattail, and bulrush. Many others were included in the category. Ibid., I, Section B. pp. 5-11.

[136] Ibid., II, Section IV, pp. 1-7.

blown open by a hidden charge of dynamite. Although actual damage was light, over 100 million gallons of water had flowed down the spillway and on into the usually dry Owens Lake before the gate could be repaired.[137]

By the summer of 1977, the pumping restriction was having serious effects not only on Los Angeles but also on Southern California in general due to the interdependent nature of water supply agencies. Completion of the second aqueduct permitted Los Angeles to obtain as much as eighty percent of its water from the Owens Valley in normal years. The scarcity of runoff plus the court injunction reduced the supply to approximately thirty-five percent. This required the city to buy nearly ten times as much water as usual from the Metropolitan Water District.[138]

The Metropolitan Water District serviced six southern counties, from Ventura to San Diego, with water supplied by the California and Colorado Aqueducts. In Northern and Central California, drought conditions were the worst in a century. To relieve the drain on their

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[137] Los Angeles Times, September 16, 1976.

[138] Personal interview with Bruce W. Kuebler, Senior Hydrologic Engineer, Los Angeles Aqueduct Division, Department of Water and Power, City of Los Angeles, September 23, 1977; also, see Los Angeles Times, June 29, and July 26, 1977.

resources, the District agreed to relinquish further deliveries from the California Aqueduct during 1977. On March 1, the flow of the aqueduct into Southern California was stopped, permitting 334,000 acre feet of water to remain for use in northern portions of the state.[139]

Within Southern California drought conditions were almost equally severe. In some instances, well levels had dropped to all-time recorded lows.[140] Because of increased demands and the decision to release supplies from the north, the District was facing serious shortages. The only remaining source was the Colorado River Aqueduct. Its pumps were operating at full capacity but still were unable to produce significant reservoir reserves to meet anticipated heavier demands of summer.

In view of the circumstances, Los Angeles petitioned the court to modify the pumping restriction. In March the city asked for permission to draw an additional 120,000 acre feet of water during the following year. The appeal was denied, but the court indicated it might be favorably disposed toward the petition if the city

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[139]The District normally was entitled to 755,000 acre feet of water. Due to the drought, the entitlement was cut ten percent in 1977. The District received somewhat less than 400,000 acre feet during 1977 from January and February deliveries and from reservoirs in Southern California. Source: Interview, Bruce Kuebler.

[140]Los Angeles Times, August 4, 1977.

took more effective steps for conservation than its existing system of voluntary rationing.

On July 1, Los Angeles imposed a mandatory ten percent reduction on all its water customers which further reduced its per capita residential use of ninety-five gallons daily, already one of the lowest rates in the state. Later that month, when the city again appealed for relief, the court completely lifted the pumping limitation. Los Angeles was authorized to operate its wells at full capacity and draw an additional 10,000 acre feet of water per month from its valley properties from August 1, 1977, through March 31, 1978.[141] The latter date marked the end of the winter season when it would be possible to measure the depth of the winter snowpack and determine whether or not the possible runoff would justify continuation or suspension of the court's order.

The court had been impressed by the severity of the drought, the effectiveness of the city's conservation efforts, and the absence of short-term impact of the pumping. Yet, the court had not forgotten its concern for the valley's interests. In lifting the restriction, the court required Los Angeles to continue its water

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[141]Based on average consumption, an acre foot of water would meet the needs of a Los Angeles family of five for one year.

conservation savings; it also required the city to pump only from the lower aquifers in the valley.[142]

Throughout most of the Owens Valley, the ground water basin is divided into zones by horizonal layers of relatively impermeable clay and silt. These confining layers, which range from a few feet to hundreds of feet in thickness, reduce the movement of water between the upper and lower zones. Consequently, pumping from lower aquifers does not immediately reduce the quantity of water in the upper zone, which furnishes moisture for vegetation. Most of the city's wells had been drilled into the lower areas, some as deep as 800 feet. By ordering the pumping only from the deeper aquifers, the court sought to preclude or minimize any environmental damage to the valley floor.[143]

There was no immediate indication what action Inyo County officials might take in view of the court's action; but, the valley continued to gear for the mounting tourist traffic. New attractions were being prepared,

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[142] Los Angeles Times, July 23, and July 26, 1977.

[143] Pumping from the lower aquifers would eventually reduce the amount of water in the surface zone, but the process occurred very slowly. Because of the very low permeability and geologic arrangement of the separating and confining layers, engineers estimated it might take as long as ten to fifteen years for the water level to respond to the deep pumping. Los Angeles, Environmental Impact Report, I, Section C, pp. 76-77.

and transportation improved. Miles of additional scenic drives were proposed, and airports were constructed so commercial airlines could connect the valley with Los Angeles. Some planners even hoped that ground reserves or other sources of water could be tapped so that in time Owens Lake again could be flooded for water-contact sports.[144]

As with any historical "might have been," one cannot say with certainty what developments might have occurred in the Owens Valley had Los Angeles not entered in search of water. In all probability the changes in American society and the extraordinary recreational possibilities in the valley would have led to the development of that vibrant industry. Agriculture would have been displaced as the valley floor became populated in a manner similiar to Big Bear or Lake Tahoe, with all the attendant problems of congestion and pollution.

The presence of Los Angeles hastened and aided the development of a recreation economy. Most importantly, the presence of Los Angeles helped preserve the valley in a quasi-wilderness state, largely free from urban frenzy; and it ensured that lands would be open

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[144] Ruth and Associates, unpaginated.

Recreational use of Owens Lake was unlikely, even if water were available. If flooded, the high salt content of the bed would have dissolved and made the water unsuitable for most activities.

and water available when needed for recreational needs.

With the advantage of time, it appears that some of the city's early actions may have been shortsighted and hastened the demise of the valley's agricultural economy. Certain of the traumatic experiences associated with the transition from agriculture to a sports-dependent economy might have been softened by a more considerate policy on the part of Los Angeles. Conceivably, such an approach might have precluded some of the bitterness that marked the history of the aqueduct and the relationship between the city and the valley. Under any circumstances, however, the valley came to serve a purpose of social value and financial reward far greater than it ever could have achieved as an agricultural community.

Chapter V

Historiographic Controversy

In 1976-77, California faced the worst recorded drought in its history. The Sierra snow pack was virtually non-existent. Throughout northern coastal areas, where rainfall commonly reached 100 inches annually, rivers and streams were reported as low as twenty percent of their normal flow.[1] Marin County, where voters had rejected all water development proposals, was one of the most severely affected. Its households were rationed to forty-seven gallons daily. Emergency relief for the hard-pressed area was provided by running a temporary line in from nearby Richmond to carry ten million gallons of water daily from the California Aqueduct system.[2]

The drain on Northern California water resources was relieved somewhat by halting the flow of the California Aqueduct to areas south of the Tehachapi Mountains. Southern California in turn drew more heavily from the Colorado River, which was able to furnish some additional water only because Arizona's Central Project was not yet

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[1]Arcadia Tribune, May 15, 1977.

[2]Los Angeles Times, May 5, June 8, 1977.

completed.

The drought highlighted two aspects of the water supply situation in California. First, the state's developed resources were taxed to the maximum by the dry weather;[3] nevertheless, proposals for further developments were under severe attack. The Carter Administration announced that it was eliminating or reducing aid for numerous construction programs. One project the President proposed to eliminate was Auburn Dam on the American River. The dam was designed to impound 2.4 million acre feet of water for distribution in just such emergencies as occurred in 1977. While the President's position brought acclaim from conservationist groups, it was the object of immediate criticism from developmental quarters which pointed out that without the dam precious runoff would continue to be lost forever.[4]

In the state Assembly, legislation was passed authorizing 3.5 billion dollars for the construction of reservoirs, canals, including the Peripheral Canal, and other facilities that would help the state keep pace with the demand for water. But despite the backing of the

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[3]From an annual mean runoff of nearly 71,000,000 acre feet of water, approximately 37,000,000 acre feet were captured for use by the various water systems throughout the state.

[4]Los Angeles Times, April 21, 1977.

governor, opponents in the Senate were able to prevent passage of the bill during the closing hours of the 1977 legislative session.[5]

Second, there was considerable skepticism as to the severity of the drought and the reported inability of the state's reserves to meet the heavy public demands. Throughout the state, officials urged water conservation to preclude the drastic rationing that was necessary in Marin County. Yet, despite the pleas and the various emergency supply measures that had to be taken, popular response was limited, and in some instances consumption actually increased.[6] Asked why there was such indifference toward the call for conservation, one official explained that people simply did not believe the situation was serious.[7]

Many Californians were understandably jaded. In recent months they had been told of an oil and natural gas shortage and had seen the price of gasoline double; coffee was said to be in short supply due to damaging frosts, and its value had tripled in less than one year; sugar had been temporarily scarce and had shot up in cost

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[5] Los Angeles Times, September 10, September 16, September 17, 1977.

[6] Ibid., April 28, 1977.

[7] Ibid., April 22, 1977.

over 300 percent; and even such basic items as paper hand towels and toilet tissue had doubled in price because of alleged shortages. Then, when told there was a water shortage, only one in five Californians reportedly believed official statements.[8]

In certain respects, the drought was reminiscent of the dry years in Southern California at the turn of the century. At that time the water shortage was felt primarily in Los Angeles due to its rapidly expanding population. Records do not reveal precisely how many people questioned the shortage. If the election results of the 1905 bond issue, which initiated the Owens Aqueduct, were used as an indicator, only one in fifteen doubted the crisis.[9] There were a few, apparently, just as in 1977, who believed the situation was not serious; for, later it was charged that the drought was artificially manufactured by powerful monied interests to dupe city tax payers into funding a water project that the interests could use for irrigation purposes.

By the 1970's, water resource developments had become indispensable features of California society. Despite their importance, many persons opposed initiating

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[8] Ibid., April 26, 1977.

[9] The bond issue carried by a margin of fourteen to one. See above, p. 74.

new projects or, in some instances, even completing important segments of existing systems. In 1905, major municipal aqueducts were still a thing of the future; but even then there were critics of the Los Angeles proposal to import water from the Owens River. Some said the Los Angeles River was sufficient for the city's foreseeable needs, or that underground supplies could be adequately developed. Others contended that local rivers were preferable sources.

The 1976-77 drought convinced many Californians of the need to capture as much runoff as possible during wet years for distribution in emergencies such as they then were experiencing. Los Angeles had reached a similiar conclusion following the dry years from 1893 to 1904. City officials were concerned that without additional water the city had reached a maximum point in its growth. When the city constructed the Owens River Aqueduct to import water for further expansion, a controversy was born which continued to 1977.

The Los Angeles Examiner was first to criticize the project when the initial bond issue was presented to the voters in 1905. Interestingly, no records have appeared indicating that the Examiner disapproved of the proposed aqueduct when all of the city newspaper editors were informed of the idea earlier that year. Yet, when the Los Angeles Times broke the pledge of secrecy and

scooped its competitors by publishing the story of the coming water supply, the Examiner immediately raised numerous objections. It suggested that Piru Creek was a better source of water; that the Water Commissioners were rushing the project to prevent proper investigation; and, that final costs would exceed by more than 200 percent the expenses estimated by the city. The criticism that proved most persistent, appearing repeatedly for over half-a-century, was that windfall profits would accrue to San Fernando Valley land speculators who could use the water to irrigate their otherwise arid lands.[10]

The Examiner apparently raised the objections out of pique that the Times first published the aqueduct story. Although the Examiner changed its position just prior to the election and gave qualified support to the bond issue, criticism was not so easily dampened. Unforeseen circumstances delayed completion of the aqueduct nearly two years beyond the original projection. First, a glut in the eastern bond market forced the city to lay-off most of its construction crews during 1910-11; and, second, failure of the Sand Canyon incline tunnels in 1913 necessitated construction of a complete new siphon. These difficulties focused attention on the aqueduct and gave

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[10]See above pp. 72-74, 77-78.

opponents a more receptive audience.[11]

The renewed attack came during the 1911 mayoralty campaign. The Socialist candidate, Job Harriman, repeated the charges against the aqueduct made by the Examiner. In addition, he alleged that if Owens River water ever was delivered to San Fernando Valley land interests, Los Angeles would lose its rights.[12] The charge, of course, was groundless; in fact, the opposite was true. Under California water law, Los Angeles was obliged to put the entire aqueduct flow to beneficial use or it could lose its appropriative claim, the basis upon which the water was exported from Owens Valley.[13]

The aqueduct was only a peripheral issue in the campaign, however. Harriman's central concern was labor's fight against the open shop and its supporters such as the Los Angeles Merchants and Manufacturers Association, the Los Angeles Times, the Chamber of Commerce, and the National Manufacturers Association. In this fight, organized labor was drawn up solidly behind Harriman.

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[11]For an example of criticism of construction features, see F. C. Finkle, "Los Angeles Aqueduct Mistakes," Journal of Electricity, Power and Gas, XXXIV, No. 2 (January 9, 1915), pp. 25-28.

[12]Harriman's platform is reprinted in a booklet by Alexander Irvine, Revolutions in Los Angeles (1911) (Los Angeles, [1912]), p. 84.

[13]See above pp. 82, 96, 125-26.

It was an apparent anomaly for a Socialist candidate to campaign against such a major municipal undertaking as the aqueduct. His opposition probably could be explained best by his hostility to the real estate and financial interests supporting the aqueduct, interests which also were supporting the open shop.

Harriman never made it clear what his election would have meant for the aqueduct. Fewer than fifty miles remained to be constructed at the time, and it was hardly conceivable that he would have ordered the project abandoned. But the occasion for a decision never arose. On the eve of the election, the McNamara brothers, who were being tried for the October 1, 1910, bombing of the Los Angeles Times building, in which twenty-one employees were killed, pleaded guilty. Harriman was one of the defense attorneys, and the change in plea just before the election doomed his quest for the mayor's office along with the cause of organized labor.[14]

Attacks on the aqueduct were not stilled by Harriman's defeat. The following year, in a booklet entitled The Conspiracy: An Exposure of the Owens River Water and San Fernando Land Frauds (Los Angeles, [1912]), W. T. Spilman charged that the Owens River was too alkaline for

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[14]For an account of the bombing, see Robert Glass Cleland, California in Our Time: 1900-1940 (New York, 1947), pp. 67-87.

human consumption, that the water would ruin the San Fernando Valley, and that as it seeped past the Narrows the water would "likewise ruin the valley below the city." Spilman's most incredible accusation was that the aqueduct was built solely to bring irrigation water to the lands of special interests in the San Fernando Valley--that real estate investors had tricked city residents into funding the aqueduct by artificially manufacturing the "drought" of 1904.[15]

Spilman had no proof for any of his allegations. As to the drought, he simply implied that it had been created by officials who deliberately released water from city reservoirs during July. Supposedly the water was

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[15]W. T. Spilman, The Conspiracy: An Exposure of the Owens River Water and San Fernando Land Frauds (Los Angeles, [1912]), see particularly, pp. 3-5, 24, 40, 54, 62, 67.

Little information has appeared on Spilman. He was the president of the Spilman Suburban Water Company which serviced a large area in the central San Fernando Valley with water from the Los Angeles River. From 1915 onward, most of the San Fernando Valley annexed to the City of Los Angeles, and the Department of Water and Power supplied the communities with water. The pre-eminent rights of Los Angeles to the river, established by the court in the Pomeroy case, and the displacement of the Spilman Water Company by the Department of Water and Power, would explain Spilman's antagonism toward the city and the aqueduct project.

For the service area of the Spilman Company, see Legrand Friel, "Map Showing Property of the Spilman Suburban Water Company, Los Angeles County, California" (Los Angeles, [ca., 1890]). This map is located in the Special Collections Library, University of California, Los Angeles.

flushed into sewers to reduce reserves and frighten residents into voting the bond issue. Spilman ignored the extensive impact of the drought: he either was unaware or deliberately refrained from mentioning that the United States Geological Survey had reported the water table throughout Southern California had dropped markedly during the period. The lack of substance notwithstanding, Spilman had sown the seed of an artificial drought, and the theory would reappear in various forms for over sixty years.[16]

As the charges against the aqueduct mounted, Mulholland suggested that the best way to clear the city would be for a panel of citizens to conduct a thorough review of the entire project. By June 1912, the City Council had established a committee consisting of two members of the Socialist Party, one labor appointee, and two members representing the Council and the Chamber of Commerce.

For nearly three months the committee investigated

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[16] See above pp. 25, 34-35.

In 1904, fresh water was used occasionally to flush sewers at points of low grade. Water was stored in special flush tanks at necessary locations.

Reservoirs were connected to sewer lines by six or, at maximum, eight inch lines. Total storage capacity of all city reservoirs in 1904 was 201 acre feet. Engineers estimated it would have required at least forty-eight hours to drain any one reservoir. Source: Sewage Record Section, Los Angeles City Hall, Room 650.

the aqueduct. Eight volumes of highly useful statistics and testimony were accumulated on every aspect of the project. Information ranged from the manner in which original land options were obtained in the Owens Valley to the various technicalities of construction, and from the San Fernando Valley land interests to the bond sales and other financial arrangements.

Assuming an openly hostile attitude, members of the board maligned the aqueduct at every juncture and repeated virtually every allegation that had been made since 1905. They said the local watershed and ground water resources could have been developed adequately for the city's needs; they charged the Owens River was polluted with fecal matter from barnyards and was unfit for human consumption; and they stated that construction techniques were faulty and the aqueduct would soon crumble.

At the end of the investigation, the board reluctantly admitted it had been unable to substantiate the numerous charges or to uncover any "direct evidence of graft." In its enmity, however, the board was unwilling to let the accumulated evidence speak for itself and indicted the project indirectly. The board stated, "if the Board had had the necessary time and money to develop all the facts along lines suggested by different individuals, a knowledge of human nature indicated that men would

have been found who had succumbed to temptation."[17]

Later that year, the complete Report of the Aqueduct Investigation Board to the City Council of Los Angeles (Los Angeles, 1912) was published. It comprised a single twelve by seventeen inch volume of 163 pages of fine print. This Report reflected the efforts of only three members of the board, however. The two engineers appointed by the City Council had resigned in mid-July when they perceived the majority intent was not an objective investigation but a prejudicial effort to discredit the city and confirm the sensational charges made against the water project. These two members, Edward Johnson and Edward S. Cobb, submitted a minority Report on the Los Angeles Aqueduct (Los Angeles, 1912) to the City Council, also published in 1912. Appearing in pamphlet form, this Report concluded there was absolutely no evidence to impugn the integrity or ability of persons involved in the project; and, that the aqueduct was in the best interests of the city, and was of "permanent and reliable" construction.[18]

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[17]City of Los Angeles, Aqueduct Investigation Board, Report of the Aqueduct Investigation Board to the City Council of Los Angeles (Los Angeles, 1912), p. 3.

[18]Edward Johnson and Edward S. Cobb, Report on the Los Angeles Aqueduct (Los Angeles, 1912), pp. 1-8. Thirty pages.

Collectively these early criticisms became the basis of the conspiratorial school of historiography on the Owens River Aqueduct. The thesis later was expanded to include the idea that the Owens Valley had been swindled out of its water. This addition was made during the 1920's and 30's as an outgrowth of the "water war" and the Watterson debacle. In the meantime, a second school of writing appeared which accepted drought as a recurring phenomenon in California. This school recognized that the 1904 drought had posed emergency conditions for Los Angeles. More importantly, the dry years were viewed from a long-range perspective of limiting the city's available water supply. The limitation would have restricted Los Angeles to a population of approximately 300,000. To this group of writers, a population of 2,000,000 was a desirable, or at least an acceptable, goal. For that measure of growth, additional water was absolutely indispensible.

The forerunner of this interpretation was William H. Hall. As state engineer in 1889, he predicted that semiarid regions of California, such as Los Angeles, would have to import water to support large populations.[19] Appearance of this school coincided with the launching of

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[19]William H. Hall, "Irrigation in California," National Geographic Magazine, I, No. 4 (1889), 278.

the construction project in 1907. Its most important apologists were Burt A. Heinly and Don J. Kinsey; but it included numerous writers who published brief articles on the aqueduct.[20] The City of Los Angeles also made important contributions in its series of Annual Reports of such agencies as the Bureau of the Aqueduct, the Water Commissioners, and the Chief Engineer, and a monthly bulletin issued by the Department of Public Service entitled Public Service. The Public Service Department also issued a Complete Report on Construction of the Los Angeles Aqueduct (Los Angeles, 1916) which synthesized

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[20]Burt A. Heinly, "Carrying Water Through a Desert," National Geographic Magazine, XXI, No. 7 (July, 1910), pp. 573-96; Don J. Kinsey, The Water Trail: The Story of Owens Valley and the Controversy Surrounding the Efforts of a Great City to Secure the Water Required to Meet the Needs of an Every-Growing Population (Los Angeles, 1928); Don J. Kinsey, The Romance of Water and Power (Los Angeles, 1926). See also Charles Amadon Moody, "Los Angeles and the Owens River," Out West, XXIII, No. 4 (October, 1905), pp. 417-42; William E. Smythe, "The Social Significance of the Owens River Project," Out West, XXIII, No. 4 (October, 1905), pp. 443-50; Allen Kelly, "The Story of the Owens River," West Coast Magazine, II, No. 3 (June 1907), unpaginated; William R. Stewart, "A Desert City's Far Reach for Water," The World's Work, XV, No. 1 (November 1907), pp. 9538-40; W. S. B. [Unidentified], "The Record of the Owens River Project," Out West, XXX, No. 4 (April, 1909), pp. 259-77; Allen Kelly, Historical Sketch of the Los Angeles Aqueduct (Los Angeles, 1913); Joseph B. Lippincott, "Tufa Cement, as Manufactured and Used on the Los Angeles Aqueduct," Transactions, American Society of Engineers, Paper No. 1254 (New York, 1913), pp. 47-52; Thomas Brooks, Notes on Los Angeles Water Supply (Los Angeles, 1938).

much of the information contained in earlier Annual Reports.[21] These various documents presented the city's viewpoint, and they were noticeably lacking in controversial material. Despite this omission, the reports were filled with both technical data and general information on virtually every facet of the aqueduct and thus are invaluable sources for any writer on the subject.

With the exception of the early criticism, the favorable interpretation of the aqueduct prevailed until the mid-1920's. Then, a bitter controversy broke out as a result of the city's land purchases in the Owens Valley, the water war, and the ensuing hostile feelings between valley and city. At that time the conspiracy school revived and added a new dimension--that the conspirators, the San Fernando Valley real estate syndicate, not only had duped Los Angeles tax payers into funding the aqueduct, but also they had swindled the Owens Valley out of its water.

The first such publication was Andrea B. Nordskog's Communication to the California Legislature Relating to the Owens Valley Water Situation (Sacramento, 1931).[22] Reportedly extracted from a manuscript he was

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[21] (Los Angeles, 1916).

[22] (Sacramento, 1931).

preparing criticizing the Boulder Canyon Project, Nordskog's polemic was submitted to the State Assembly by an Inyo County Assemblyman. Ordered included in the Assembly Journal, reprints were made and distributed.

Nordskog repeated what became the standard charge of the school, that the San Fernando land syndicate promoted the "aqueduct scheme." He then alleged that the United States Reclamation Service had been in collusion with the syndicate and certain Los Angeles politicians to destroy the Owens Valley for the benefit of the developers. It all was accomplished, Nordskog wrote, through the efforts of Joseph B. Lippincott, Supervising Engineer of the Service. Lippincott had deceived valley farmers and conspired to deprive them of their water rights by convincing them to turn their rights over to the government so he could deliver them to Los Angeles. Nordskog neither identified the rights in question nor did he explain how they could have been "delivered" in controvention of existing water law. That Lippincott was also a private water consultant and provided service to Los Angeles supposedly took the place of the missing facts in support of the allegation.

Nordskog indirectly attributed to Los Angeles even the Watterson Bank failure. He charged that at the time of the investigation of the two brothers' activities, members of the Department of Water and Power conspired

with an auditor of the California State Banking Department to "further destroy the people in the valley." Left unexplained were the Watterson manipulations which led to the failure of their business empire.[23]

Nordskog's tract was followed soon by one of the most vitriolic conspiratorial interpretations, Morrow Mayo's Los Angeles (New York, 1933). In a chapter entitled "The Rape of Owens Valley," Mayo wrote that between 1899 and 1903 Los Angeles bankers and real estate promoters bought up worthless San Fernando Valley land. At the same time, Fred Eaton posed as an agent of the Reclamation Service and took options on riparian lands in Owens Valley. Simultaneously, the Service itself induced other valley farmers to turn over their "rights and claims to the Government."[24]

Once the desired lands and water rights had been secured, the Service abandoned its proposed reclamation project in Owens Valley. To irrigate syndicate lands, Los Angeles taxpayers were "frightened" into funding an

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[23] See especially pp. 5, 6, 11, 14, 24-27. Nordskog was a professional concert singer and a self-styled exposer of conspiracies. In addition to opposing the Owens Valley and Boulder Canyon Projects, he campaigned against many other interests during his life. Abraham Joffman, "Joseph Barlow Lippincott and the Owens Valley Controversy: Time For Revision," Southern California Quarterly, LIV, No. 3 (Fall, 1972), p. 253, n. 8.

[24] (New York, 1933), pp. 220-46.

aqueduct through the illusion of a drought created when "water was run into the sewers." The end result was the destruction of the Owens Valley under the guise of the "greatest good for the greatest number."

Under Mayo's pen the conspiracy thesis became more deliberate. When Spilman raised the allegation of an artificial drought, he simply noted that city reservoirs were connected to the sewers and implied that water had been dumped. Mayo dropped any qualification and directly charged, without proof, that the city had released water during the heat wave of July 1904. Mayo regarded the aqueduct as an "obscene enterprise" in which Los Angeles "stole the waters of the Owens River," drove the farmers from their homes, and turned a rich agricultural paradise of a thousand square miles into "primitive desert." He concluded with the bitter essence of the betrayal thesis: '"The Federal Government of the United States held Owens Valley while Los Angeles raped it."'[25]

Following Mayo in 1933, W. A. Chalfant republished his Story of Inyo (Bishop, 1933). In his first edition, Chalfant had included a brief descriptive chapter on the aqueduct, which he called a "wonderful enterprise worthy of an ambitious city." He did feel that Inyo County had been "taken unaware" by the project, but he indicated

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[25] Ibid., p. 246.

that whatever differences existed between valley and city could be resolved in a mutually agreeable fashion.[26]

The water war changed Chalfant's attitude, and in his 1933 edition he was an unrestrained critic of Los Angeles and wrote in support of the conspiracy thesis. Chalfant began with the story of a manufactured drought. Then, relying heavily on Nordskog, he elaborated extensively on the betrayal theme of the Reclamation Service. He pointed out that at the time Eaton had taken the first options on Owens Valley lands in 1904-05, many farmers believed he intended to raise cattle; others, however, thought he was an agent of the Reclamation Service because of his friendship with Lippincott. Valley chagrin was compounded when it was learned that Eaton had secured options on water bearing lands for purposes of export and that the Reclamation Service did not intend to build a project in the valley. Farmers who sold to Eaton at agricultural values were incensed that they had not received higher prices based on the value of water rights; farmers who had not sold were angered that a reclamation project was deferred to the Los Angeles plan for an aqueduct.

As had Nordskog, Chalfant wrote that Lippincott was the Judas who had betrayed the valley. First, he had

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[26](Bishop, 1922), pp. 321-30.

not somehow forced Eaton to identify himself as a private agent securing options for his own use; and, second, he had aborted the reclamation project by recommending that the Service withdraw in favor of Los Angeles. Chalfant went on to charge that Los Angeles was under the "dictatorship" of Mulholland who deliberately set out to ruin the Owens Valley by not building a large reservoir in Long Valley. Chalfant was convinced that such a reservoir could have impounded sufficient water to meet all possible needs of both city and valley.[27]

Later events demonstrated that Chalfant's expectations where shortsighted. In all probability an earlier construction of the Crowley Reservoir in Long Valley only would have delayed a confrontation between city and valley. During the 1970's particularly, even the full flow of the Owens River was not adequate to meet the city's needs. That was forcibly demonstrated by the controversy over increased pumping of ground water.

As previously mentioned, Chalfant later became an important member of the Inyo Associates and worked with Los Angeles to develop the recreation industry in the valley. He lived to see the Long Valley Dam dedicated in 1940, and his presence and comments at that ceremony were significant and particularly gratifying to Los Angeles in

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[27](rev. ed.; Bishop, 1933), pp. 337-61.

view of his long-standing hostility toward the city.

The next appearance of the conspiracy thesis did not occur until 1946. Then, Carey McWilliams synthesized the school of thought in his Southern California Country: An Island on the Land (New York, 1946).[28] In a chapter on water, he elaborated on the necessity to import the liquid into Southern California; immediately thereafter, however, he changed tack and repeated the charge of an artificial "water famine" "stimulated" by San Fernando Valley land developers.

McWilliams wrote that the aqueduct was constructed solely to bring water to those lands. As proof, he cited the termination of the aqueduct in the north end of the valley above syndicate property. He did not mention that the city originally planned to end the canal some fifteen miles to the east in Big Tujunga Canyon. This location would have made delivery of water to syndicate lands problematic or, at least, very expensive, as they were located in the northwestern end of the valley where the communities of Reseda, Winnetka, and Canoga Park later were founded. Further, he omitted the fact that the final storage site was determined by a board of disinterested investigating engineers who changed the terminus in order to increase the potential for hydroelectric generation,

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[28] (New York, 1946), pp. 183-204.

not to facilitate irrigation.

More importantly, McWilliams' overlooked the geologic structure of the San Fernando Valley. As a gigantic underground reservoir, and source of the Los Angeles River, it was the logical terminal location for a canal. There the Owens River water could be spread and allowed to percolate downslope, without cost or evaporative loss, for later recovery at the collection galleries in the Narrows. The intent of the city to so recapture the water subsequently was recognized by the California State Supreme Court.[29]

McWilliams also alleged that the aqueduct dynamitings during the 1920's occurred only because the valley was unable to obtain justice in the courts. He did not mention that the Wattersons, who led the fight against the city, could not resort to the courts because their own illegal activities had caused the financial embarrassment of the banks. McWilliams explained their manipulation of books as the need to carry "delinquent mortgages," a charge that even Chalfant, a native of the valley, did not make. Chalfant had honestly acknowledged that the Watterson bank shortages were due to embezzlement. McWilliams ignored the issue of fraud: Los Angeles

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[29] Los Angeles v. San Fernando, et. al., 14 Calif. (3d) 199, 259 (1975).

had simply waited until the two leaders were deeply in debt and "then had them indicted and sentenced to San Quentin Prison" for manipulating their books to help indebted farmers. That many of those same indebted farmers were ruined as a result of the Watterson activities did not suit McWilliam's thesis and was not mentioned.

In a closing swipe, McWilliams charged that the aqueduct was "unsound from an engineering standpoint."[30] He cited no specifics other than suggesting that the Long Valley Reservoir should have been constructed earlier. Such fault-finding had begun with the Aqueduct Investigation Board and became a gadfly-type of journalism.[31] At best, the criticisms seemed captious. When constructed, the aqueduct was the largest municipal project of its nature in the world; and even though mistakes were made, they subsequently were acknowledged and corrected.[32]

When compared to more recent aqueducts, such as

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[30] Ibid., p. 191.

[31] See Finkle, Journal of Electricity, XXXIV, No. 2, pp. 25-28.

A number of Finkle papers are located in the Water Collection of the Honnold Library, Claremont Graduate School.

[32] For example, see "New Style Piers Will Safeguard Aqueduct Siphons From Floods," Intake, XXIV, No. 5 (May, 1947), pp. 5, 12; "Aqueduct Inspection, Repair Accomplished in Three Weeks," Intake, XXV, No. 11 (November, 1948), pp. 12, 22.

the Colorado, California, or the second Owens, there were various engineering changes. When the original Owens Aqueduct was built, materials were far more expensive than labor; and the important consideration of costs influenced many construction techniques. For example, in 1907-13 it was less expensive to drill tunnels through mountains than it was to make extensive use of steel pipe in going around them, although the latter would have been quicker. Thus, the great number of tunnels on the original aqueduct. When the second barrel was built, labor was the more expensive construction ingredient, and the use of tunnels was kept to a minimum. The second aqueduct was run more directly through the desert in mile after mile of high pressure pipe.

Another change on more recent aqueducts was the use of multiple pipes as opposed to the single-pipe siphons used by Los Angeles in 1907-13. Multiple pipes had an advantage if repairs became necessary; they could be shut down individually, permitting a portion of aqueduct flow to continue. Conversely, a closed single pipe, in a siphon or at a pumping station, shut off the entire flow.

Despite later engineering innovations, the Owens Aqueduct was unique among the systems bringing water into the Los Angeles area. It was entirely gravity flow, and, in addition, it produced electricity equivalent to that

produced from burning approximately two million barrels of oil a year. Other aqueducts required electricity to pump their water. Thus, if from no other standpoint than energy consumption and air quality, which had become so important by the 1970's, the Owens Aqueduct was a remarkably cost-efficient achievement.[33]

The conspiracy thesis was given its most articulate expression by Mayo and McWilliams. Sympathetic works that followed essentially were rote and unimaginative repetitions of the same old allegations. This was particularly true of Albert N. Williams' The Water and the Power (New York, 1951),[34] and William G. Bonelli's Billion Dollar Blackjack (Beverly Hills, 1954).[35] And while none of the writers in the school, with the exception of Chalfant, cited any source other than Mayo, a reader could follow the progression and embellishment of central ideas from one presentation to the next. In general, the school was represented by journalists or writers whose background and training, as well as their interpretation, distinguished them from the anticonspiratorial writers who were professionally trained or

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[33] Los Angeles Times, October 26, 1976.

[34] (New York, 1951), pp. 80-81.

[35] (Beverly Hills, 1954), pp. 113-22. Bonelli later fled to Mexico from a bribery indictment. Los Angeles Times, December 1, 1974.

recognized historians.

One of the earliest opponents of the conspiracy view was Robert Glass Cleland. In California in Our Time (1900-1940) (New York, 1947), he discussed the conflict between Owens Valley and Los Angeles. He felt that Chalfant had "exaggerated" in attributing to Los Angeles a "plot to destroy the valley." Cleland did not legitimize the "manufactured drought" theory by giving it space in his account, but he did feel that Los Angeles could have prevented the ill will and "ill-favored reputation" it acquired in removing the water by using greater "diplomacy and patience."[36]

Another principal supporter of the anticonspiracy school was W. W. Robinson. An officer in the Los Angeles Title Insurance and Trust Company, Robinson had ready access to many records of San Fernando Valley land sales, including those of the "syndicate." After reviewing mounds of records, he labeled the conspiracy "pure myth" in "Myth-Making in the Los Angeles Area," Southern California Quarterly (March, 1963).[37]

Other noted California historians agreed with Robinson. Both Andrew F. Rolle, in California: A History

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[36](New York, 1947), pp. 178-94.

[37]"Myth-Making in the Los Angeles Area," Southern California Quarterly, XLV, No. 1 (March, 1963), pp. 90-91. See also his Los Angeles: A Profile (Norman, 1968), pp. 108-09.

(New York, 1969), and Walton Bean, in California: An Interpretive History (New York, 1968), considered the Nordskog-Mayo-McWilliams presentation a colorful exaggeration. Both historians pointed out that the San Fernando Valley was simply one of many investment areas of the so-called land "syndicate." The investors had taken an option on valley lands when they learned, through inside information, that Henry Huntington was planning to build a Pacific Electric streetcar line into the area. The proposed aqueduct caused them to exercise their option sooner than they otherwise might have because they could see the possibility of tremendous windfall profits.[38] Ralph J. Roske, in Everyman's Eden: A History of California (New York, 1968), as well as Warren A. Beck and David A. Williams, in California: A History of the Golden State (New York, 1971), also considered the San Fernando land fortunes a "happy coincidence."[39]

In his California: A Remarkable State's Life History (Englewood Cliffs, 1970), John W. Caughey was more cautious in his opposition to the conspiracy thesis. He accepted the reality of the drought and water shortage

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[38]Rolle, California (New York, 1969), pp. 503-04; Bean, California (New York, 1968), pp. 350-51.

[39]Roske, Everyman's Eden (New York, 1968), pp. 490-91; Beck and Williams, California (New York, 1971), pp. 308-09.

of 1904, but he did not contest "the conviction" that somehow the city devastated the valley and "bilked the citizens of Los Angeles in order to reap swollen profits on San Fernando real estate . . . ."[40]

The most detailed narrative of the aqueduct project was Remi A. Nadeau's The Water Seekers (New York, 1950). His account began a moderate, or middle-of-the-road, approach to the subject. He dealt at length on the water war of the 1920's, and he pointed out the many human errors which had been made in both city and valley camps. He agreed with Chalfant that the city's greatest mistake was the failure to construct a large reservoir in the valley at the outset of construction; yet he totally discounted any type of conspiracy.[41]

Nadeau was the first to indicate accurately that to hold its claim to the waters of the Owens River, Los Angeles had to "show a fairly constant use of them."[42] It was this provision of California water law which caused the city to make irrigation water available in the San Fernando Valley. If appropriated water was not

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[40](3d ed.; Englewood Cliffs, 1970), pp. 368-69.

[41](New York, 1950). Nadeau follows this same approach in his Los Angeles: From Mission to Modern City (New York, 1960).

[42]Water Seekers, p. 35.

beneficially applied, a claim could be lost. Thus, while the land purchasers initially profited from this requirement, Los Angeles had little choice but to make full use of the water it had appropriated.

Nadeau made extensive use of the Annual Reports and other records of the Department of Water and Power. In addition, his bibliography contained references to interviews with members of the Department and Owens Valley residents, as well as to Los Angeles and Owens Valley newspapers. Unfortunately, his work lacked footnotes, and without extensive research the source of his many quotations have no identification. Despite this shortcoming, his study was important in initiating the third school of historiography on the valley--the balanced synthetic treatment.[43]

Another important contributor to this school, and the most scholarly treatment of the aqueduct, was Vincent Ostrom's Water and Politics: A Study of Water Policies and Administration in the Development of Los Angeles (Los Angeles, 1953).[44] His primary concern was the political aspect in water resource development. While

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[43]The Water Seekers was revised in 1974 and the new volume included numerous pictures from files of the Department of Water and Power. The text, however, remained essentially unchanged.

[44](Los Angeles, 1953), pp. 56-57.

mentioning the alleged conspiracy in relation to the 1911 mayoralty election, he gave no credence to the idea of a manufactured drought or other such intrigues. As had Nadeau, Ostrom noted both the shortcomings and the accomplishments of the many persons involved with the aqueduct.

In Aqueduct Empire (Glendale, 1968), Erwin Cooper was principally interested in more recent twentieth century developments--the Metropolitan Water District, Central Valley Project, and California Aqueduct. He was conversant with rainfall records, however, and in his brief treatment of the Owens Aqueduct he pointed out that the drought at the turn of the century included some of the driest years in recorded California history. To Cooper, as to Nadeau and Ostrom, it was the inadequacy of local resources that caused Los Angeles to turn to the Owens River.[45]

Remarkably, these studies in no way dissuaded the conspiratorial writers. As late as 1971, a Sierra Club publication entitled The Water Hustlers (San Francisco) blindly repeated the story of an "artificial water famine" created when Los Angeles secretly dumped thousands of

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[45](Glendale, 1968), pp. 18, 59-68.

gallons of water into sewers.[46] Two years later Richard Coke Wood published his brief The Owens Valley and the Los Angeles Water Controversy: Owens Valley As I Knew It (Stockton, 1973), which was an expansion of his master's thesis of 1934. Wood had relied heavily on Chalfant, Nordskog, and Mayo, and his book contributed little more than a few personal observations from the period he had lived in the valley.[47]

In a measure, Wood's extensive use of early secondary sources exemplified one problem all writers faced in relation to the Owens Aqueduct--the absence of certain primary sources. Ostrom, for example, depended in great part on newspapers, records of the Department of Water and Power, and other government publications. To these same sources, Nadeau had added interviews and a few private materials obtained from families of participants. Conspicuously missing in these, as in all other accounts, were references to private papers and journals of such early principals as Fred Eaton, Harrison

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[46] Robert H. Boyle, John Graves, and T. H. Watkins, The Water Hustlers (San Francisco, 1971), pp. 142-43. The book deals with water developments in New York, Texas, and California. On May 2, 1977, in a telephone conversation with T. H. Watkins, who prepared the section on California, he indicated the story of the "water famine" had been taken from McWilliams. Watkins said he had learned the story was untrue, but he was uncertain of the source of this information.
Watkins was residing in New York.

[47] (Stockton, 1973).

Gray Otis, William Mulholland, and Joseph B. Lippincott. These important records, if they existed at all, were either widely scattered or were in private hands, unannounced and unavailable to researchers. Even the papers of Nordskog, such a pivotal contributor to the conspiracy thesis, were primarily in private hands.[48]

In the case of Otis, many papers which might have provided insights into his motivation for supporting the aqueduct probably were destroyed in the Times fire of 1910; others he is reported to have deliberately burned himself. Another hopeful source of information on a possible conspiracy was the collection of papers and documents of Moses H. Sherman. He not only was a member of the land syndicate but also was on the Board of Water Commissioners at the time Mulholland first suggested the idea of an aqueduct to the city. Unfortunately the Letter Press Books and Copy Letter Files at the Sherman Foundation contained no references to San Fernando Valley lands during the important years from 1900 to 1908.

Writing in 1976, William L. Kahrl, Director of Research in Governor Edmund Brown Jr.'s Office of Planning and Research, bemoaned the lack of primary

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[48]Hoffman, Southern California Quarterly, LIV, No. 3, p. 253, n. 8.

research materials in a two-part article, "The Politics of California Water: Owens Valley and the Los Angeles Aqueduct, 1900-1927," in the California Historical Quarterly (Spring, Summer, 1976).[49] He criticised previous writers on the aqueduct for "arguing their cases on one another's authority." Then, relying heavily himself on secondary sources such as Nordskog and Chalfant, he proceeded to restate faithfully the conspiracy thesis.[50]

Although Kahrl did not repeat the dumping charge, he began his account with the essential ingredient of the conspiracy story, "the so-called drought which descended on Southern California at a time variously cited as 1892 or 1895 and which reportedly persisted until 1904." This "drought," Kahrl alleged, "originated with Mulholland in the [bond] election of 1904." As proof, he cited Cooper's Aqueduct Empire in which, he claimed, Cooper had relied on "Mulholland's authority that the average rainfall in

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[49] "The Politics of California Water: Owens Valley and the Los Angeles Aqueduct, 1900-1927," California Historical Quarterly, LV, No. 1 (Spring, 1976) pp. 2-25, and No. 2 (Summer, 1976), pp. 98-120. Part I, p. 2.

[50] On occasion Kahrl ignored the primary sources that do exist. For example, he relied on Chalfant's statement that "more than 60,000 acres were already under irrigation" in Owens Valley in 1904. Part I, p. 4. The Reclamation Service specifically reported only 30,000 acres were irrigated in 1904. United States Department of Interior, United States Geological Survey, Third Annual Report of the Reclamation Service, 1903-04 (Washington D. C., 1905), p. 64.

Los Angeles from 1895 to 1904 dropped to only six inches per year." To show that rainfall greatly exceeded a yearly average of six inches, Kahrl cited United States Weather Bureau records which recorded the annual average for the period as just over eleven inches. Moreover, Kahrl noted, in 1904 Los Angeles received 11.88 inches of rain plus a "record downpour" in the month of August which was not again received "in the entire forty-year period from 1891 to 1930."[51]

Los Angeles, of course, had not relied on Mulholland's memory but on the same Weather Bureau statistics that Kahrl cited. Further, what Kahrl omitted from his text was that the "record downpour" of August amounted to only 0.17 inches. While that was an admittedly heavy rainfall for a California August, it had no appreciable impact on the overall effects of the drought. As a comparison, on May 8-10, 1977, an unseasonal 2.8 inches of rain fell on the Los Angeles Civic Center and up to eight inches in local mountains. It was the wettest May in Los Angeles since 1921. Hydraulic engineers in the county Flood Control District calculated that 673,000 acre feet of rain fell throughout the county, with approximately 300,000 acre feet dropping in the Los Angeles area.

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[51]Kahrl, California Historical Quarterly, LV, No. 1, p. 8.

At the height of the storm in excess of an estimated 21,000,000 gallons of runoff were flowing into the Pacific Ocean from the Los Angeles River due to the intensity of the downpour. Despite this loss, nearly ninety-five percent of the rainfall was captured in reservoirs or spreading facilities, or was absorbed into the ground to recharge the water table. Nevertheless, engineers reported that the weekend storm had little impact on the effects of the two-year drought other than to reduce temporarily the need for irrigation and lawn watering.[52] Similiarly, in 1904, Kahrl's "record downpour" did not influence the effects of the eleven year subnormal rainfall nor did it alter the emergency conditions which had peaked in July of that year.

As further support for his contention that the drought was a ruse, Kahrl wrote that the city's need for "strict measures to prevent waste" and the prediction that the "city's existing water supply could not support more than its present population [were] calculated from whole cloth." The unreliability of the claim was demonstrated by the fact that "before the aqueduct was completed, the population of the area more than tripled

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[52]County of Los Angeles, Flood Control District, Water Conservation Division, Report on Impounding Rain Water (June 6, 1977), pp. 8-10. (Typewritten.) See also Los Angeles Times, May 9, 10, 11, 13, 1971.

without the city experiencing a water shortage of any kind."[53]

While Kahrl conveniently avoided defining the period to which he referred, the records showed that from 1876 to 1904 Los Angeles grew in population from 6,000 to 200,000.[54] The conclusion the reader obviously was to reach was that if the water supply permitted growth of that extent, the "so-called drought" must have been part of the "conspiracy" of the San Fernando Valley land "syndicate," which Kahrl went on to describe.

The remainder of Kahrl's essay was full of similar innuendo and skillful slanting of materials. As early as 1905, he stated, Los Angeles "looked ahead to the day when . . . [it] would tap the entire flow of the Owens River."[55] Again, "the decision to sacrifice the future of the Owens Valley for the sake of development in the San Fernando Valley was made unilaterally by the city . . . ."[56]

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[53]Kahrl, California Historical Quarterly, LV, No. 1, p. 10.

[54]See above pp. 29-30.

[55]Kahrl, California Historical Quarterly, LV, No. 1, p. 13. My emphasis.

[56]Ibid., No. 2, p. 116.

Kahrl also attributed the Watterson Bank failure to Los Angeles and, particularly, to Mulholland, who had "prepared a killing blow" as part of the planned "destruction of the Owens Valley." This "line of attack" was at the "valley banks." While Kahrl later explained that the Watterson failure was due to embezzlement, the reader was left with the unmistakable conclusion that the failure was somehow part of the city's planned conspiracy to destroy Owens Valley. That this was Kahrl's intent was demonstrated in his conclusion where he quoted favorably from a 1927 article in the Sacramento Union: '"The municipality [Los Angeles] became a destroyer, deliberately, unconscionably, boastfully."[57]

Kahrl's essay was a skillful, although classic, example of thesis writing. While he acknowledged that the original purpose of Los Angeles was to secure sufficient water for continued growth, this admission was lost in his constant impugnation of the city's motives. He added the final dimension to the conspiracy thesis: not only was the drought a syndicate ruse, but the destruction of the Owens Valley was also a part of the plot.

Kahrl never mentioned the city's efforts to rebuild the valley's economy. It seemed clear that

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[57]Ibid., p. 116, from the Sacramento Union, April 3, 1927.

nothing would have satisfied him, as well as other writers of the conspiracy school, except for Los Angeles to have remained completely out of the Owens Valley and for all of the valley's water to have remained there. Given the demand that had developed for water by the 1970's, however, it is probable that had it not been Los Angeles, some other community or agency would have exported the water and would have become the object of the conspiracy school's attack.

Chapter VI

Summary and Conclusion

> There was seemingly never a region so unlikely to become a vast metropolitan area as Southern California. Without lumber and minerals, . . . lacking water and fuels, surrounded by mountains, desert and ocean. [It] is . . . man-made, a gigantic improvisation.[1]

As the quotation from Carey McWilliams implies, Southern California is an almost unequaled paradox. The region is virtually without natural resources, yet man's ingenuity has transformed it into a "vast metropolitan area." No single "improvisation" has contributed more to its development than the construction of gigantic water projects. By importing water from sources hundreds of miles distant, the region has been converted from a desert-like condition into one of the nation's principal population centers, and it has assumed a leading position in such important industries as shipping, agriculture, aircraft, space, construction, food processing, transportation, and oil refining. If the foreign water supplies were permanently cut off, however, the population would be forced to move and the industries would die.

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[1]Carey McWilliams, Southern California Country: An Island on the Land (New York, 1946), p. 13.

Southern California simply could not sustain the degree of development it had attained by the 1970's on its native supplies.

The incredible efforts that have gone into obtaining water were well illustrated by the experiences of Los Angeles, which, by the 1970's, secured only some twenty percent of its water from local sources. Initially the city had been totally dependent on the river. The seasonal nature of rainfall often made water scarce, and it caused the Spanish and Mexican governments to give early settlers priority to the river's flow. This preference was known as the pueblo right, and it became one of the most important water rights in the state.

At the time of the gold rush, another important water right evolved. Successful mining operations required large quantities of water; yet, throughout the gold country, most streams and gullies were dry from April through November, when winter rains began. To work their claims, miners tapped rivers and lakes as distant as 200 miles. Their water rights they protected by the doctrine of appropriation. The dual concept of this doctrine--priority in time, and beneficial application of water--became cardinal features of California water law, recognized both in the Water Code and by the state Supreme Court.

As the population of Los Angeles grew, the city used these early water laws to import and protect water from the Owens River. The dry years between 1893 and 1904 had reduced markedly water supplies throughout Southern California. Records of the United States Geological Survey showed that artesian flow declined as much as eighty percent, well levels dropped up to sixty-five feet, and the flow of the Los Angeles River, the city's primary supply, shrank nearly fifty percent. Up to 1904, that was the river's lowest recorded flow.[2]

More significant than its immediate impact on water supply was the long-range implication of the drought. The reliable yield of the river had to be calculated on the basis of a series of dry years because the city then had no supplemental or alternate supply. Aggravating that situation was the length of time required to recharge the source of the river. Originating in subterranean reserves of the San Fernando Valley, the flow could remain low for a year or more after rainfall again rose to normal. This phenomenon was illustrated during the drought of 1976-77. Water officials announced that two or three years of normal rainfall could be required to replenish ground water sources and other reserves such

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[2]See above pp. 29, 34-35.

as lakes and reservoirs.[3]

Further, water supplies in 1904 were additionally taxed by the record-breaking growth in Southern California. Completion of the first two transcontinental railroads pushed the city's population from 6,000 in 1876 to 200,000 by 1904. The overwhelming proportion of this increase coincided with the dry years. In 1890 the population had been only 40,000. The combination of growth and drought increased official concern. By developing the river to its fullest extent, installing water meters, and preaching conservation, Los Angeles met its needs in 1904. The future had still to be reckoned with, however.

Los Angeles might have curbed its growth; but at the time growth was equated with progress and was part of the civic ethic. Not until the latter 1960's and early 1970's was serious consideration given to limiting population growth in certain areas. In 1904 Los Angeles was anticipating a population of two million and for that many people additional water was absolutely necessary.

Rapid depletion of ground reserves and resulting salt water intrusion vindicated the city's decision not to rely on that source. Nor were neighboring watersheds the answer; they were largely developed by other communities, and to have obtained them would have required an

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[3]Los Angeles Times, May 23, 1977.

exercise of emminent domain, action the city wished to avoid. Los Angeles did initiate suits to stop large irrigators in the San Fernando Valley from pumping ground waters. Based upon the evidence presented, the court recognized the city's right to, and need for, these waters and enjoined the pumping.[4] Conspiracy writers have referred to the city as "depriving" valley farmers of water; that the court recognized emergency conditions and allocated the waters to domestic uses they have chosen to ignore.

Los Angeles turned to the Owens River because surplus waters were available there. The city filed notices of appropriation on the surplus under features of water law that had been established in the gold fields over a half century earlier. The law required that appropriated waters be beneficially applied within a reasonable period of time, or rights were subject to forfeit. This provision applied not only to miners and farmers but also to municipal agencies. Los Angeles was no exception. It was obliged to make use of the water it acquired from the Owens River to retain its rights.

Los Angeles acquired the water in anticipation of of continued growth; so, aqueduct flow in excess of

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[4]See Los Angeles v. Pomeroy, 124 Calif. 597, (1899); Los Angeles v. Hunter; Los Angeles v. Buffington, 156 Calif. 603 (1909).

immediate domestic requirements was turned to irrigation. This obviously benefited owners of San Fernando Valley lands; but it was a windfall, not a conspiracy. Conspiratorial writers have neglected the intricacies of water law as they have ignored other aspects of the aqueduct story which did not suit their purposes. Instead they have referred to the "secret manner" in which many land options were taken in the Owens Valley. Their implication has been that these lands provided rights to water for export. That was not true. The first valley lands were acquired primarily for a diversion site and to preclude adverse actions by downstream riparian owners. Not until the 1920's did Los Angeles purchase lands with the objective of acquiring additional water rights appurtenant to the lands.[5]

Unfortunately those purchases became the cornerstone of major hostilities between Los Angeles and Owens Valley. While many farmers gladly sold, others rallied behind the Watterson brothers and resisted city purchases. The water war that followed colored attitudes, influenced numerous writers, and led to the charges that Los Angeles raped the valley. Writers of this persuasion represented the valley as an agricultural Garden of Eden. They did not mention the short growing season, the alkaline content of

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[5]My emphasis.

the soil, or the serious drainage problem the Reclamation Service had pointed to as obstacles to an irrigation project.

The collapse of the Watterson banks ruined many of the valley residents and was a major tragedy of the period. Yet, logically it could not be attributed to Los Angeles. The city's presence and the land purchases may have hastened the discovery of the brothers' activities; but the failure was due to their embezzlement and likely would have been discovered at some future time whether or not the city were present.

The bank failure and resulting financial distress caused the city to increase its land purchases, including town properties. This, in turn, hastened the rise of the recreation industry as Los Angeles actively promoted the development of this endeavor to offset the loss of the valley's agricultural base. The area contained numerous attractions for recreation and was ideally suited for what was becoming a major new business interest throughout the United States. By the 1970's over twenty percent of all jobs throughout the state were directly or indirectly associated with recreation. Studies indicated that Americans increasingly were developing a "leisure mentality" which was resulting in a doubling of leisure-time expenditures every eight or nine years. Sparked by longer paid vacations, more three-day weekends, and

rising family income, recreation was little influenced even by periods of recession.[6] As a result, the valley's economic prospects were brighter than they ever could have been had it remained strictly a farming community. Ironically, it was water which, through development and multiple use, made possible a major portion of the recreational activity.

Conclusion

Competition for water has been a constant theme throughout California's history. Competition for the Los Angeles River began soon after the founding of the mission in San Fernando Valley and helped indentify the concept of pueblo rights. Competition for streams and rivers in the gold fields began in 1850 and resulted in the development of appropriative water law. Competition for the Hetch Hetchy Reservoir was an early struggle between conservationists and San Francisco and ended in the flooding of the Grand Canyon of the Tuolumne River. Competition for western Sierra waters to supply the Central Valley and California Water Projects became hard-fought ballot issues between Northern and Southern California voters. Competition for the Colorado River pitted California against Arizona both on the river and before

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[6]"People Are Shelling Out More Than Ever For A Good Time," U. S. News and World Report, LXXXII, No. 7 (February 21, 1977), pp. 40-42.

the United States Supreme Court. Competition for the Owens River, the first major municipal effort to develop a distant watershed, was only a preliminary chapter in the larger over-all struggle to develop the state's water resources.

In 1977 there was little reason to believe the state-wide competition would end. After fifteen years of effort to secure its construction, the Peripheral Canal was still on the drawing board. Stormy sessions marked legislative attempts to plan for future state water needs. The Owens Valley was seeking to reduce pumping of its ground water reserves by Los Angeles. In fact, throughout the entire western United States, water was becoming a progressively scarcer commodity, while demands and resulting competition continued to mount.

To meet the ever increasing needs, in May 1977, Secretary of the Interior Cecil D. Andrus announced that the water policy of the Carter Administration was to promote "conservation and more efficient use." "If people keep on like they're doing, wasting water," Andrus said, "there will be two results in many areas [of the West]. First, it will stop their growth right in its tracks. Second, they will flat run out of water."

"We must maintain our stewardship of water like

that of fine gold," Andrus admonished.[7]

In California water already was treated like gold--white gold.

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[7]As quoted in Los Angeles Times, May 25, 1977.

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