

History of the Long Beach Water Department 1945-2000



The Long Beach Water Department

**A Historic Perspective
1945-2000**

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BRENNAN S. THOMAS



Brennan Thomas took over the administrative leadership of the Long Beach Water Department in 1944 and managed the Department for the next 22 years through its most dramatic growth period. In all, his career with the Long Beach Water Department spanned nearly 44 years from 1924 until his retirement in 1967. The Administration building is named in his honor.

Brennan S. Thomas was born in 1901 in Salt Lake City, Utah. He remained in Utah until his graduation from the University of Utah. He served with the United States Marine Corps from 1918 to 1919 and with the United States Field Artillery from 1919 to 1920.

Brennan Thomas first began his career with the Water Department in 1924 as a draftsman. He came up through the ranks to the position of Division Engineer until he was called to active duty as a Captain in the Officer Reserve Corps in 1941, early in the United States engagement in World War II. Stationed in the Southwest Pacific theater, he served with distinction in Australia where he received his commission as Major and later in New Guinea where he advanced to the rank of Lieutenant Colonel.

He was later awarded the Legion of Merit for his service as base engineer at Oro Bay, New Guinea. He received a presidential citation for service in the Papuan Campaign and received two commendations for outstanding service.

In 1944, Brennan Thomas returned to the Water Department and was reinstated as Division Engineer. He was officially appointed to the position of General Manager in 1944 after the death of General Manager George R. Wade.

Brennan Thomas served as General Manager of the Long Beach Water Department from 1944 to 1967.

In 1967, the Board of Water Commissioners officially changed the name of the Water Department's Administration Building to the Brennan S. Thomas Administration Building in recognition of his 44 years of dedicated service to the city of Long Beach.

Brennan S. Thomas died in 1968.

Introduction

This second volume of the history of the Long Beach Water Department begins midway into the decade of the 1940s and covers the next five and a half decades up to the beginning of the new millennium. During those 55 years, the Water Department has mirrored the vast social, economic, and technical changes that were occurring not only in the city of Long Beach, but in the Southern California region and in the whole state of California.

Decade by decade, this history documents not only the Water Department's growth but our community's growth and the changes that evolved, particularly as they influenced water consumption. We will also focus on the Water Department's highly effective management policies, which year after year have assured its customers the availability of pure water at a reasonable price.

Water not only sustains human life, it is equally essential to the development and expansion of industry and to the agriculture that has been a mainstay of Southern California and the state. A history of the Water Department, therefore, is as well a history of the communities and the people it has served. As those communities change, the demands they place on the Water Department of course also change -- demands not only for the quantity of water they need but for its quality and for the locations to which it must be delivered.

Long Beach, between 1945 and 2000, doubled its population and profoundly shifted and diversified its economic and employment base. The United States Navy that for most of those years wielded a powerful economic influence in Long Beach has no presence at all in 2000. The Long Beach Navy Base and Naval Shipyard are gone, as are the many housing units they required both on and off the Base. Douglas Aircraft Company, a mainstay of the World War II military air force, no longer exists but, after several corporate transformations, has become The Boeing Company— still an aircraft manufacturer and still a major Long Beach employer. New industry, new retail, new hotels, and hundreds of mid- and upper-income dwelling units ready to be built along the downtown shoreline all are putting increasing supply and service demands on the Long Beach Water Department.

In 1911, the city created its own water company by buying out its two private suppliers, the Long Beach Water Company and the Alamitos Water Company, with funds from an \$850,000 bond issue the voters had approved in the election of June 27, 1911. From the beginning, the Department has been entirely self-supporting and, in fact, also pays the city an annual reimbursement in lieu of taxes, often donates Water Department-owned land for city purposes, and pays for services the city provides to the Department.

In 1931, the Water Department experienced two major events that historically have possibly been the greatest influences in the Department's ability to provide for the ongoing water needs of this growing city. In that year, the voters amended the city charter to establish the Board of Water Commissioners, five citizens appointed for five-year terms by the city manager (now appointed by the Mayor) with city council approval. Since then, 49 Long Beach citizens have served on the Commission in addition to the five currently serving in 2000. The second pivotal event of 1931 was the city's opportunity to join the Metropolitan Water District of Southern California becoming one of its original 13 cities.

Among the changes the reader will note through the course of these 55 years is the effect of evolving technology on the operation of the Department. From the initial transition to punched cards for data management in the late 1940s to the Management Information System in 1999, and from the first laboratory where one technician performed no more than simple basic analyses to the 1997-built 10,000 square foot, high tech laboratory where graduate chemists perform 40,000 to 50,000 analyses a year, the technological changes are monumental. In 1944, staff did everything manually. They drove to the wells, physically turned them on and when the reservoir reached a desired level they would drive back and turn them off. In the year 2000, of course, electronics does it all.

In 1948, the Department hired about 500 employees, on the eve of the new millennium about 210. Technological efficiencies have made enormous differences in what tasks those 200 people perform. More staff required more supervisors. In 1948, 60 secretaries were on staff; in 1999, ten. Fifty years ago, manual labor dug trenches; today heavy equipment does it. Manual labor gave way to mechanical labor then to automation and finally to electronics, computerized data management, and satellites communication.

The history is organized as a straightforward chronology decade by decade with two exceptions. Chapter 1 begins mid-decade with 1945 to pick up where the first volume of the Water Department's history left off. 1945 is also a particularly significant year with which to open volume II as, at that time, the country was nearing the end of World War II. It represented the threshold of stunning changes in demand, availability, and delivery of water for Long Beach and its Water Department. Chapter 4, on the other hand, covers a period of two decades, the 1970s and 1980s for reasons having much more to do with data accessibility than with the historical events of the period. Readers will note chapters 2 through 5 each begin with what I intended as a "setting the scene," -- a local and state overview of the chapter's social, economic, and legislative highlights.

This history has been culled from the Department's annual reports; from various newspaper articles and publications; and from personal interviews with past General Managers William T. "Mac" McWilliams, Dan Davis, and Robert Cole, with a former Superintendent of Supply and Treatment, John Swart, and with two former Commissioners, William Williams and Sam Rue.

Renee B. Simon
September, 2002

CHAPTER I

War Ends, Growth Begins Concluding the Decade of the 1940s

For the Long Beach Water Department, the period between 1945 and 1950 was one of intense growth, heavy capital investment, and mid-20th century state-of-the-art technical advancement. All were responses to unmet construction needs accumulated during the war years coupled with a surging post-war migration of veterans to Southern California that would soon half again the Long Beach population. World War II, which the United States entered officially with the Japanese attack on Pearl Harbor December 7, 1941 had at last concluded after four years of brutal fighting in both Europe and the South Pacific. The governments of Germany and Italy surrendered and President Harry Truman declared V-E Day on May 8, 1945. Japan surrendered later that year and the world officially ended hostilities August 14, 1945. Actually the 1945-46 fiscal year, which opens the period of this chapter, began two months after V-E Day and about two months before V-J Day.

One of the first opportunities war's end presented to the Water Department was the ability to acquire materials and equipment unavailable during the war. During the war, all factories had been diverted to the manufacture of military materiel. Civilian products the Department would have needed -- automobiles, trucks, even water meters and pipe -- were simply not being manufactured. The metal was being used for tanks and armaments; the labor force had been conscripted into the military service, many fighting on the front lines.

Following V-J Day, the federal government quickly lifted most of the restrictions that had been imposed on the production of civilian goods and on November 3, 1945 President Truman abolished the War Production Board, the agency that had rigidly monitored civilian use of natural resources. It would take the Long Beach Water Department a stretch of time, however, before it could benefit from the return to peacetime policies. Its budget had not anticipated the war's end nor the demise of the War Production Board and its restrictions.

The second half of the decade was to begin with a new general manager; it was to be a period of significant new construction and capital investment; and it opened for the Department

the opportunity to institute some major technical changes in how it conducted its business. New housing construction was occurring throughout the city to meet the need of the rapid population growth. For the water Department that meant new pipes, new meters, new wells, and major capital investments to address its desperate need for greater storage and distribution capacity.

To lead the Long Beach Water Department through this transition from war time to peace time and from a quiet retirement city to a rapidly growing urban environment, the board of directors selected Brennan S. Thomas as the new general manager following the death of long-time General Manager George R. Wade on November 24, 1944. Wade, who had suffered through a lingering illness, had been general manager since 1940. Brennan Thomas officially took the reins as of January 1, 1945. He was to lead the Department for the next 22 years, successfully taking it through its most challenging growth years.

The Board of Directors also experienced turnover. On December 5, 1946 Board President George M. Winstead died in office and Edward T. Martin was appointed to fill out his unexpired term. Later, on July 1, 1948, George D. Ezell joined the Board, appointed to fill the seat of J. Will Johnson who had completed his term of office.

Expanding the system to effectively serve its growing customer base dominated the Water Department's development and capital investment planning during the immediate post-war years. In the short term, the Board decided to meet the need for additional and backup water services with a program of main extensions and new 20-inch and 30-inch pipelines. These projects comprised three of a five-pronged effort the Board had approved in 1944 and for which they had obtained War Production Board approval -- even during the war.

The first project, which allowed Colorado River water purchased from the Metropolitan Water District (MWD) to blend with water pumped from the Department's local wells, required laying 7,624 feet of 30-inch pre-stressed steel cylinder reinforced concrete pipe from the connection at Cherry Avenue and Wardlow Road to the Citizens Pumping Plant at 2804 Newport Avenue.

A second project was designed to protect the downtown central business district from the danger of a water shortage should the cast-iron main under Pacific Coast Highway suffer a serious break. It required installation of nearly 15,000 feet of 30-inch reinforced concrete pipe

direct from the Alamitos Reservoir to tie into three existing downtown lines to furnish a supplemental water supply.

And the third project, to increase the supply of Colorado River water to the U.S. Naval Station and to the harbor district industrial area west of the Los Angeles County Flood Control Channel, involved laying 13,500 feet of 20-inch cast-iron pipe.

These were important projects to meet an immediate clearly defined need. However, the board and general manager could see that Long Beach would be growing and growing and no one could predict the total long-term needs. The whole east side of the city, which had been vacant land and bean fields, was already being subdivided and ultimately would support thousands of new tract houses, new schools, shopping centers, churches, parks. Hundreds of new apartment housing units were being built in Bixby Knolls and North Long Beach. Post-war developers worked in big numbers: 214 units north of Harding and west of Orange; 298 units west of Atlantic between 61st and 63rd; 176 units south of Del Amo and east of Atlantic; 458 units east of Clark and north of Atherton; 310 units near Atherton and Bellflower; 318 units near San Anselme and Atherton; 230 units east of Downey and north of South Street; 243 units north of Atherton and east of Bellflower and the projects just kept piling up year after year. A special census in January 1946 tallied a city population of 241,106 but by the end of 1949 the population estimate was already 255,000 and they were consuming water at a rate of 112.8 gallons per person per day. During this five-year period, two to three thousand new services were ordered and installed each year.

To be certain the system would always be prepared to handle such service demands, the board in October 1945 hired consulting engineers to make a comprehensive survey of the city's water system and to project its needs for the next 25 years. They completed their work the following year in October 1946 with a two-volume report analyzing in detail existing conditions, major deficiencies, and the costs to correct them. Their recommendations were designed to meet service demands for the following 25 years in five-year increments. The report evolved into what was later called the Master Expansion Plan, approved by the Board December 1, 1947 with a total price tag of \$6,305,000.

For the first time in about 20 years, the Board planned to ask the voters to approve a bond issue and it would be for \$6.4 million to pay for the Master Expansion Plan improvements.

In a carefully planned voter education campaign, the board members, city council, most civic organizations, the newspapers, and many service clubs concentrated on explaining the need to the voters -- the city had plenty of water but had gravely inadequate storage and distribution facilities. So effective was the campaign that on Election Day, May 11, 1948 the voters supported the 20-year general obligation bond issue by a majority of 10 to 1. Between 1911 and 1927 Long Beach had approved four prior water bonds but this one received more votes than the other four combined. It was obvious the voters had absolute confidence their water Department would handle the money wisely and build well.

The essentials of the Master Expansion Plan called for a new 12-tank, 40- million-gallon capacity reservoir in west Long Beach on Dominguez Hill solely to store Colorado River water; six additional steel tanks at the Alamitos Reservoir increasing its capacity by 20 million gallons; a booster plant to increase pressure; and numerous large mains leading to and from the reservoirs.



The most vivid example of the water Department's deficient storage capacity occurred in 1947 during an unusual five-day heat wave between July 28 and August 1 that brought on a then record-breaking five-day average water use of 45.6 million gallons. On July 28, the city experienced an all-time high in consumption of 49.7 million gallons for the day. Local wells were typically pumping 20 million gallons daily but on the peak day they produced 31.3 million gallons, about 56 percent over the estimated safe average daily yield. Equally dramatic was the strain on the delivery of Colorado River water. The Metropolitan Water District feeder had a design capacity of 19.4 million gallons yet on the peak day it delivered 24 million gallons or 23 percent above its rated capacity. In 1947, the city had only one feeder line for the MWD and no storage tanks at all for the Colorado River water to tide the city over peak periods. The one tank farm on Alamitos Hill had a total capacity of 40 million gallons.

With the passage of the bond issue, the Department purchased 18 acres on Dominguez Hill at \$3500 an acre and a permanent pipeline easement at \$1.50 a linear foot solely to provide

storage capacity for the Colorado River water, which accounted for approximately 40 percent of the Department's total annual supply. At 170 feet elevation, it allowed for gravity flow and was considered an excellent site. The facility, named the J. Will Johnson Reservoir in honor of the Board's recently retired president, was to have 12 steel tanks each with a capacity of 3.3 million gallons. At the same time the MWD built a 54-inch lateral to bring the Colorado River water to the Johnson reservoir.

Site grading began in October 1948 and was completed nine months later in July 1949. Six miles across the city to the east, the Master Plan provided for expanding the Alamitos Reservoir system by 20 million gallons and the laying of a 54-inch pumpline from the Citizens Plant to the reservoir.

While the city relied strongly on imported Colorado River water to supplement its local supply, Long Beach well water from its 24 wells typically produced 60 percent of the city's water needs. With the post-war growth in demand, in 1946 the Department drilled two new wells, North Long Beach wells #5 (the first new well since 1932) and #6. Recognizing that improper disposal of industrial wastes throughout the metropolitan area was rapidly increasing pollution of surface channels and underground waters, the Department designed a new water-tight string of casing to lower into the hole. A third well, Development Well #5 at the Long Beach airport, had been drilled in 1924 but as flights increased, its above-ground structures were found to be hazardous. Plans to build a below ground concrete chamber for the pumping equipment fell victim to the war and it was not until 1946 that the staff could finally re-equip the well and put it into regular service -- offering no obstructions to aviation. Development Well #5 became the Department's first well with no above-ground structures. Alamitos Well #13, drilled and tested in 1946, went into service November 1947.

Long Beach well water was plentiful, extremely soft, and of great purity but known throughout the region for its extraordinarily offensive odor, color, and taste attributable to its high mineral concentrations, particularly of sulfur. At long last, the Board of Water Commissioners agreed to try to remedy the problem with the construction of an \$800,000 water treatment plant. On October 11, 1945 the Board approved a contract with James M. Montgomery Engineers to design a treatment plant at Spring Street and Newport Avenue to remove the offensive color, taste, and odor of up to 25 million gallons a day. It was a year

later, on November 21, 1946, that the Board approved the final plans and specs. But the program became much slower than anyone had anticipated. With the equipment ordered, staff learned a scarcity of steel and "other abnormal manufacturing conditions" would hold up delivery until into the 1948-49 fiscal year. As it turned out, even that was optimistic. Long Beach consumers only began to enjoy colorless, odorless water from their taps in June 1951 when the treatment plant was finally in full 24-hour operation -- having been underway for nearly six years.



An important added element of the treatment plant was the chemical and soil testing lab permitting the city itself to handle all the required soil and chemical analyses. In fact, in 1946, management added a chemist to the staff and acquired considerable

new laboratory equipment. The chemist, for example, could analyze the corrosiveness of soil samples prior to installing new water mains to determine whether to use cast iron or asbestos cement pipe. In some areas of the city, the soil could be extremely corrosive to cast iron.

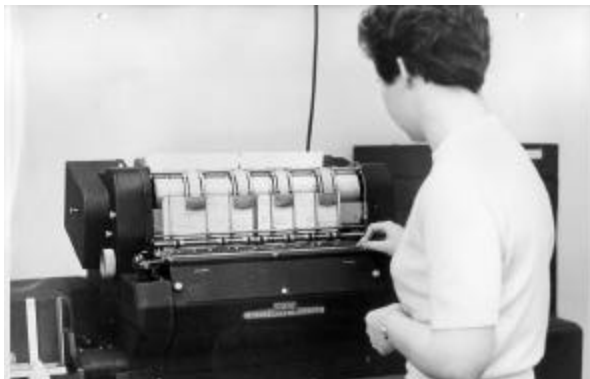


One of the major problems for the Department staff was how to respond rapidly to periodic breaks in the water mains. Until attended to, such breaks could cause extensive and expensive damage. Too often, inadequate communication tools meant the maintenance teams would not be alerted to the emergency early enough. Throughout the war years, the Department shared the Police Department's short-wave system but operated its own nine two-way short-wave radio sets installed in their emergency vehicles. By late 1945, however, management had found a more suitable partner in the Long Beach Fire Department, which also had a major interest in water and a need for efficient two-way communication. They also found a more suitable technology -- use of a dedicated radio frequency. On August 7, 1946 the FCC issued its permit for radio station KCJA, which would be located in a building adjoining Alamitos Reservoir. The Water Department provided the transmission equipment and the Fire Department agreed to maintain it. With nine autos and trucks equipped with two-way radios, the Department finally had the ability to transmit emergency messages to and from vehicles in the field reliably and quickly. Radio station KCJA became the communication link the Department so desperately needed.

Despite a 1946-47 budget exceeding \$2.5 million and in excess of 60,000 customers, until 1946 the entire Department's accounting and payroll had been done manually. In December 1946, the business management staff introduced the then state-of-the-art punched card system for cost accounting. Starting cautiously with one operator, a keypunch machine, and a verifier, they could distribute labor costs from daily time cards, manage budget control, maintain certain personnel records, and handle other statistical data. With more sophistication, they developed a materials accounting system. The keypunch staff and equipment rapidly expanded over the next several years as management could tally the savings, the greater accuracy, and the extensive increase in statistical information.

In just the few years since the end of World War II, both the city and its water Department were striding ahead quickly, tackling the issues associated with maturing from a retirement town to a modern city. One sign of that growth was the opportunity to expand its representation on the Board

of the Metropolitan Water District. As one of the MWD's original 13 founding members in 1931, the city always had representation on the board. The initiating state legislation provided that each member would have one director with additional directors for each \$200 million in assessed



valuation. In 1946-47, Long Beach's assessed value for the first time exceeded \$200 million and City Manager Carl Wirsching appointed Lloyd C. Leedom to join Gus A. Walker as the city's second representative. Mr. Leedom was seated on May 9, 1947.

CHAPTER 2

The Emergence of New Technologies The decade of the 1950s

Overview

1951 marked the 40th anniversary of the Long Beach Water Department, an occasion that helped open the decade with a feeling of optimism for the future and a feeling of satisfaction for the accomplishments of the past. For Long Beach, as for the country at large, however, the decade will also be remembered for the development of the hydrogen bomb and a fervor for backyard bomb shelters. Stockpiling bottled water, whether to survive an earthquake or an international disaster was high on most people's priority lists. Although the country was to be involved in the Korean War during much of the period, the Department did not face the material shortages and limitations they had during World War II.

During the decade, the board experienced the loss of several members through death, retirement, or resignation but their replacements, who became equally strong and effective board members, assured a consistent policy of orderly growth within the system to meet the continuing needs of Long Beach's growing population and expanding economy.

Notable among the major issues that characterized the decade were the serious drought within the region and the creative approaches to address the ongoing problem of declining water tables particularly for the cities in the central basin to the north of Long Beach. The decade's most controversial water issue in Sacramento was the planning for the California Water Project -- an estimated \$1.5 billion aqueduct to bring surplus Northern California water 585 miles to rapidly developing Southern California. Expected to be operational 20 years in the future, the water was to be available at about the time Southern California would have outgrown its rights in and to the Colorado River supply.

Other issues included the challenge of adding, in one swoop, in excess of 12,000 new customers living in a recently annexed area of the city. The strong economy and the influence of a growing population of young, skilled, and well educated families probably helped account for the passage of a second bond issue to meet the needs of that growth. For the twenty years,

for example, between 1937 and 1957, the Department's customers had more than doubled from 30,618 to 67,657.

The decade also brought the board the political challenge of fluoridating our drinking water, a subject that became extremely controversial for a number of years. They also faced the technical challenge of subsidence in the harbor area, which for the Water Department alone carried a multi-million dollar price tag.

This next ten years then would involve significant administrative reorganization, capital investment, policy development, and technical advances.

Several of the major projects begun during the late 1940s were not to be concluded until the calendar pages had flipped into the early years of the 1950s. Primary among these was certainly the completion of the Master Expansion Plan, estimated 80% constructed by June 30, 1951. However, the staff marked the start of operation for the 32nd Street Booster Plant on May 23, 1951. And on January 9, 1952, Colorado River water at last flowed into the new J. Will Johnson Reservoir tanks on Dominguez Hill. This was the first time since the city began buying water from the Metropolitan Water District that it had the capacity to store any of it. On May 8, 1952, the six additional new tanks on Alamitos Hill were also completed and by the close of the 1952-53 fiscal year, the Master Expansion Plan, designed to meet Long Beach's water needs for at least the next 25 years, was fully in operation.



The second major carry-over project was the Frank E. Wall Water Treatment Plant named to honor the Board president whose persistence had made it a reality. The five-acre plant, designed by James M. Montgomery Engineers based in Pasadena, California, and whose cost of \$1,140,000 was financed entirely from earnings, went into full, 24-hour operation on June 27, 1951. Unless someone had lived in Long Beach before the treatment plant, they could not really appreciate what it had been like to open the tap in the kitchen and fill a glass with brownish, sulfur-smelling water. Underground peat beds gave

the water what has been picturesquely called a swamp-like odor. It may have been pure but who would have believed it? That had always been the condition of most of Long Beach well water. With the completion of the treatment plant, for the first time in 40 years, the Department was able to provide its customers with sparkling, colorless, odorless water. There was truly jubilation in the streets. However, according to John Swart, one-time Treatment Plant supervisor, “for several years, old-timers would come with their five-gallon pails to get some of ‘that good water’. We kept a special spigot for them to take the water before treatment,” he recalled.

With its typical far-sighted vision, the Board had built a 26-million-gallon plant with capacity adequate for a city of 500,000. By its first year anniversary, a justifiably proud and well-trained staff had guided 2026 visitors through the facility on a regular schedule of twice weekly tours. Later in the decade, the board authorized construction of a supplemental concrete 14-million-gallon collection basin (cistern 3) where the best of local well water could be brought to standard with fewer chemicals and less aeration. It saved considerable expense and brought the total daily capacity of the treatment plant up to 40 million gallons.

In a somewhat different vein, another carryover program from the late 1940s was the need to effect several rate increases. The first took effect on February 26, 1948 and was imposed to generate about \$500,000 in new revenue annually to pay for the construction backlog plus new mains and connectors to serve the burgeoning population. The 34% rate increase, although the first since 1931, did encourage customers to use less water the following year. On August 10, 1950, the Board had to impose a second increase of 10% to cover the increase from \$15.00 per acre-foot to \$20.00 the MWD was charging for Colorado River water. By 1950, 40% of the Long Beach Water Department supply was being bought from the MWD. Then just a year later, on August 30, 1951, the Board instituted yet a third rate increase, this one about 22% because continuing increases in the cost of labor and materials had outstripped existing revenues. The rate structures brought on their expected decline in usage as consumers attempted to compensate for the higher unit costs. In time, they adjusted to the price of water when, in December 1954, the Board could respond to improved revenues with a surprising 10% rate decrease. For the remainder of the decade, consumer costs remained stable.

Overshadowing all else, however, during the early years of the decade was the problem of diminishing water levels in our local wells. Southern California's semi-arid climate endured particularly harsh times with the lack of rainfall during the decade of the 1950s. 1950 and 1951 were the sixth and seventh consecutive years of drought conditions but 1951 marked a record - a mere six totally sunless days during the entire year. Although Long Beach obtained 60% of its water by successfully drilling its own wells, its proximity to the ocean carried the constant threat of saltwater intrusion -- dire consequences if the groundwater basins were overpumped and the water pressure critically reduced. From an era of flowing artesian wells at the city's birth in 1895, the static water level by 1950 varied from 20 to 105 feet below sea level. Since 1916, water levels had been dropping by about five feet a year.

The whole region was experiencing a serious depletion of underground waters within the Coastal Plain. Recognizing the serious implications, the Department took an active role in establishing the Central Basin Water Association to study this area's water problems, develop remedial plans, and in cooperation with other public and private agencies to put the plans into practice. In May 1950, the Long Beach Water Department became a member of the Association and General Manager Brennan Thomas served as the Department's representative.

By March 1952, the State Water Resources Board had estimated an overdraft in the Central Basin of 100,000 acre-feet. Although a temporary break in the drought occurred in 1952 with a seldom-seen rainfall of 17.42 inches, it could have no appreciable effect on the local underground water levels. This basin, unfortunately, is covered with a clay layer that prevents water from soaking into the ground but rather forces it into a run off. As an example of how critical the situation had become, during the preceding five years, the Central Basin had experienced a disturbing 30-foot drop in underground water levels. The Water Department management believed one solution would be to establish a Central Basin Municipal Water District for the entire area from north of Long Beach to Whittier Narrows and strongly urged its formation. The new district would be able to join the Metropolitan Water District and would be eligible to purchase Colorado River water for spreading and replenishing the Central Basin's ground water supply. On December 2, 1952 the voters of that region did in fact approve the creation of the Central Basin Municipal Water District with the specifically stated purpose of

providing additional spreading water from the MWD to supplement underground sources within the District.

Engineers agreed surface distribution of Colorado River water was the only immediate method to replenish the basin. But for the new District, becoming a member of the MWD unexpectedly ran into a snag when the Metropolitan Water District raised legal questions about the annexation of certain communities within the Basin area. Fortunately, the Los Angeles Flood Control District came to the rescue. Empowered to establish Conservation Zone One, which comprised essentially the Central Basin area, it had the authority to purchase and spread imported waters. With water levels in Zone One dropping about ten feet a year, the situation was urgent.

Although Long Beach was not a member of the Central Basin District, it still had reason to be concerned with the outcome of the new District's access to a supplementary water source. The question was whether the spreading to the north would also percolate as far as the city's wells. The Central Basin District's access to Colorado River water for spreading would help conserve Long Beach's dwindling ground water supplies. Actually, the Central Basin finally was able to join the Metropolitan Water District in 1954 becoming its second largest member covering 186.77 square miles and 55 communities. Until then, however, the Flood Control District's quick, flexible response had filled an essential short-term need.

These declining underground water levels were exacerbated by the unabated ballooning population in Long Beach as in all of Southern California. By mid-decade, the Department had 30 producing wells ranging in depth from 400 to 2000 feet -- about as deep as they dared go so as not to compromise underground pressures serving as a barrier against salt water intrusion. Although the Department always had access to supplemental Colorado River water, local wells provided 60% of the city's supply. Late in 1952 and early 1953, three newly drilled wells (Commission Wells 7, 9, and 10) on the city's east side came on line to serve that area's mushrooming growth and replace wells of declining productivity. And in 1955, the Department achieved an outstanding accomplishment with the completion of Commission Well #11 -- the first rotary drilled, gravel packed well in the supply system. At 2000 feet, it was then the deepest producing well in the south coastal basin and featured a hole diameter of 28 inches all

the way. For the bottom 1100 feet it used a new method of perforation that permitted production from all saturated strata.

Growth data at the close of the 1951-52 fiscal year confirmed the need for the ongoing well drilling: the Department had set a new annual record for service connections, nearly doubling the number of the year previous. That year's total was 3,190 as compared to 1,680 in 1950-51. Overall during this era of extraordinary growth, the Department was adding on average, 2000 new customers a year -- mostly in the Los Altos area of east Long Beach. At that rate, were it to continue, over the next ten-year period the Department would add 20,000 new accounts or as many as 80,000 more people expecting to shower, water their lawns, and quench their thirst at will. Additionally, the Department partially shared responsibility with the Fire Department for protection of all these new homes and neighborhoods from the danger of fire. During the decade, the Water Department installed many hundreds of new fire hydrant laterals and when necessary provided the water for fire fighting although it received no income or revenue for the service.

Compounding the service needs due to the housing construction boom, Long Beach in 1956 began the annexation of an existing housing tract contiguous to the city that represented nearly 12,800 customers. Although they were served by the private Lakewood Water and Power Company, once these Lakewood Plaza neighborhoods were incorporated into Long Beach (effective March 25, 1959), the city's water Department was required to provide their water. Tapping into the city's water supply was not a problem but to acquire the independent company and all its infrastructure required a new \$6.884 million bond issue, which the voters obligingly supported.

Serving such a burgeoning customer base could not have progressed as seamlessly and effectively as it did without commensurate administrative developments. The total number of employees had remained fairly stable at about 250 so the Department had to be operating ever more efficiently. The first of what would be several major administrative changes during the decade occurred in April 1951 when the Board approved a move to bi-monthly billing jointly with the Gas Department. In a mere four months, from June to September, the Commercial Division had successfully revised the entire billing system. In fact, the result was a total reorganization of the Commercial Division that transferred the Water Department's

responsibilities and 44 of its employees to the Gas Department. Earlier, employees of both Departments had shared the Commercial Division's tasks of meter reading, billing, and collections. Giving the Gas Department sole control of those tasks for both water and gas greatly improved the Division's administrative functioning and helped streamline the Water Department's management. It simply paid its proportionate share of the costs to the Gas Department.

A logical next step between the two Departments occurred in 1954 when the Commercial Division took on the production and mailing to customers of a single joint bill. The Water Department had been using punched card equipment since 1948 for such tasks as job costs, payroll, budget control, and general cost accounting. After considerable analysis, both Departments agreed to yet another use for the punch-card equipment: creation of a single paper bill (they had until then each prepared postcard type bills) covering both water and gas. As a result, as of February 16, 1954 the Water Department transferred its well trained punched-card section to the Gas Department Commercial Division joining the former Water Department staff who had transferred several years earlier. Joint billing operations began early in the 1954-55 fiscal year.

Management was looking at internal reorganization as well. Effective May 16, 1953, the General Manager restructured his administrative divisions reducing their number from seven to four. Three divisions, main construction, service construction, and supply and shops, were combined to create a single Distribution Division. It and three others: engineering, water supply, and accounting resulted in not only fewer division heads but tighter administrative controls and a better understanding of mutual problems within the divisions.

The decade opened with a decision of especial importance to all city employees -- participation in the California State Employees' Retirement System. What was then known as the 1/70th plan had been approved by the city's voters at the November 8, 1949 election and became effective at the end of July, 1950. Among its features was the mandatory retirement of all employees at age 70. During the fiscal year, 28 long-time employees whose service ranged from 18 to 42 years retired -- nearly 9% of the Water Department personnel.

An assortment of issues, some technically challenging, others politically challenging, tested the Board's policy-making skills throughout the decade. Among the most difficult was

the issue of fluoridation. The dental profession had discovered that by supplementing water systems' naturally occurring fluorides to achieve an optimum concentration of one part per million, communities could quickly improve children's dental health and increase their resistance to cavities. However, in Long Beach as in many other cities, fearful citizens were convinced the additional fluorides in some way could relate to the threat of communism or the ascendancy of other political or social groups they considered "undesirables." They appeared frequently before the city council to insist the council prohibit fluoridation of the city's water supply regardless of the recommendations of the American Dental Association.

The first mention of fluoridation as a "controversial subject" and one brought before the Board all year was in the 1950-51 annual report. The staff, with Board direction, prepared a comprehensive study of the issue with findings and recommendations that kept what was essentially a health issue from escalating to an unmanageable political issue. They concluded:

- (1) the issue is primarily for dental and medical welfare and as such essentially a public health issue
- (2) citizens either through the direct ballot or through their elected city council should approve installation
- (3) the city should have a definite financing plan for installing the equipment and operating it

Based on those conclusions, the Board adopted a three-step policy designed to remove them from the decision loop. The Water Department, they announced, would only fluoridate the water after completion of certain procedures.

- (1) A recommendation from the city health officer to add fluorides and in what concentration
- (2) A request from the city council to the Department to act on the health officer's recommendation
- (3) A city council decision on how to pay for the equipment, i.e. a general tax levy, an increase to the Health Department's budget, or an increase in water rates

The Board obviously felt very comfortable with its policy and reiterated on numerous occasions particularly during the early years of the decade the propriety of their instituting fluoridation only when their three health and fiscal caveats had been addressed. In fact, Long Beach became the second city in California, right after San Francisco, to supplement its water supply of naturally occurring fluorine.

Fast on the heels of the political hot potato of fluoridation came the much more serious technical and financial problem of subsidence. Within the Long Beach harbor area and covering about 3.5 square miles at the core and about 10 square miles overall, the land was sinking as a consequence of the extensive oil drilling. As the oil was pumped out, the land in the Port area literally sank in places as much as 25 feet or more! While the problem and the search for a solution fell primarily on the Harbor Department and City Council, the Water Department owned and maintained about 16 miles of pipe and 700 laterals serving the area. Until engineers some years later developed the successful remedy of reinjecting water to fill the pockets, land fill was the technique of choice to bring the land back up to street level. However, with as much as 30 feet of fill covering its water mains, repairing a break would be nearly impossible, requiring instead abandonment of any mains that had sprung a leak. To raise or replace the mains -- another alternative -- carried an estimated price tag of \$2 million.

The extraordinary regional growth during the decade brought spillover issues for the Water Department. While Long Beach population growth meant providing for thousands of new customers, regional growth meant new highways, freeways, bridges, and improved flood control channels all of which required relocating water mains. Depending on where the work occurred, all or much of the costs were absorbed by state and federal agencies. In the harbor area it was often the Army Corps of Engineers. Relocations for highways and the vast new freeway network required an unbelievably complex funding formula developed by the state Department of Transportation. Regardless of where the funding came from, extensive relocating of water mains and considerable rearrangement of the water system kept the engineers at their slide rules throughout the decade.

A new technological breakthrough management put into operation in mid-1958 brought the Department's efficiency and operational effectiveness to a remarkable new level. Called

telemetering and supervisory control (or in layman's language, push-button-control), its instrumentation at one central location could instantly report any mishap occurring at any well or storage reservoir in the system and allow the operator to make adjustments remotely to remedy the problem. It meant one man could control water production and storage operations from a central control point at the main pumping plant at Spring Street and Redondo. From there, at the press of a button, the operator could turn a well on or off, open or close a valve.

Telemetering replaced the previous 24-hour, around-the-clock inspection tours, but even more important, it made available a degree of quick action for emergencies unknown before. By the end of the decade, both reservoir tank farms, the 32nd Street Booster Station and all the wells were tied into the telemetering system.

The decade began with the final construction touches to complete the major expansion funded by the 1948 bond issue. As the decade was concluding, the Department was embarking on yet another significant capital investment program and again funded by voter-approved bonds. This second bond issue, adopted May 14, 1957 for \$6.884 million, bought the citizens three very important projects. First, the Long Beach Water Department could buy that part of the Lakewood Water and Power Company and its equipment that had been serving 12,000 customers subsequently annexed into Long Beach. Second, plans went ahead for site grading and construction of five additional storage tanks at the Alamitos Hill Reservoir bringing total water storage to about 117 million gallons. And last, the construction of a separate 14-million-gallon concrete collection basin (Cistern 3) at the treatment plant. It allowed the separate treatment of two categories of local well water -- the highly colored that required intensive chemical treatment and the best of local water requiring minimum treatment. The result was a major savings in reduced chemical needs and, when combined with the existing 26-million gallon treatment facility, a total of 40 million gallons of local water that could be treated daily before distribution.

The Board of Water Commissioners experienced a number of changes during the decade of the 50s. During the last week of 1951, Francis D. Reider resigned to accept appointment to the Board of Harbor Commissioners. To fill that vacancy, the City Manager on December 26, 1951, appointed Fred S. Dean. Only a few months later, in April 1952, Frank Wall resigned as President and member to avoid any appearance of his conflict of interest as a

stockholder in an oil company that might lease Department land for oil development. Joining the Board in his stead on April 22, 1952 was Lawrence O. Jackson.

The next new member to be appointed to the Board was Joseph F. Bishop, on July 8, 1952 after W. G. Wilson's term expired. With the beginning of the 1954-55 fiscal year, Lawrence Jackson's term expired and a local realtor, Oliver Speraw, was appointed to the Board in his place. The Board remained fairly stable until July 30, 1957 when long-time member Edward T. Martin died and Robinson Reid was appointed to fill out Martin's term.

Another long-time member, George Ezell, who had served since July, 1948, retired from the Board after ten years and was replaced, on July 22, 1958 with Glen A. Gerken.

As these Board members looked ahead to the next decade, they could not predict what lay ahead for this multi-million dollar business and the responsibilities it owed to its nearly 300,000 clients, but they clearly had the talents and the resources to handle the challenges the 1960s would present.

CHAPTER 3

The Fifty Year Milestone

The Decade of the 1960s

Overview

Although Long Beach's population continued to grow throughout the decade of the 1960s, the city itself was beginning to show the signs of a weakening downtown economy. Typical of the period was the wild expansion of the Southern California freeway system, which encouraged massive suburban subdivision development and the rise of the glamorous, multi-stored shopping mall. As the malls began to ring Long Beach -- four or five within easy freeway access of the city's more affluent consumers -- downtown retail visibly declined.

City Hall was looking desperately for an attraction to boost downtown and tourism and in 1967 the city found a really big one. Long Beach had bought the grandest ocean liner afloat, the Queen Mary, and brought her to Pier J to become a hotel, convention center, restaurants, and a maritime museum complex. Plans for Pier J itself, a 311-acre landfill, were to provide for massive port expansion and adjacent to the Queen Mary to host elegant retail and commercial development. For the Water Department it would mean new and greater demand.

At the same time, oil exploration tapped into one of the world's largest oil fields -- the 1.2 billion barrel East Wilmington pool of California crude that would be bringing in tideland oil revenue to the port and city for years to come.

The Navy was expanding its presence in the city as the war in Viet Nam escalated. Shipping of supplies and troops increased and maintenance and repair of our Navy ships kept the Naval Shipyard at full capacity.

Throughout the decade, Sacramento kept water planning in the forefront. Construction of the California Water Project was moving apace and by the close of the decade, surplus northern California water was almost ready to pour into its southern California terminus, Lake Perris. In 1967, the legislature created the State Water Resources Control Board as the regulatory agency that could monitor and preserve water quality statewide and prevent further pollution of the precious and increasingly scarce resource.

Much was happening in the Long Beach Water Department as well: major construction, water treatment plant expansion, land development, landmark lawsuits and related legislation, image building, and more. Quality control loomed large among the Department's priorities. Staff in the upgraded laboratory did daily sampling and testing, a program of full-time research explored ways to lengthen the life of home plumbing systems, and ever higher water quality resulted from the combined operations of aeration, sun bleaching, chemical treatment, and cleaning the water-transmission mains.

The decade of the 1960s opened with a precedent-setting occasion. For the first time in the Long Beach Water Department's 40-year history, it finally had its own home -- a modern structure housing accounting, engineering planning, and all the divisions for its general administration. The location of the beautiful new administration building, on Wardlow Road near Orange Avenue, was actually the geographic center of the Department's service area. In addition, it was central to the treatment, pumping, and storage facilities and contiguous to the Department's emergency services and maintenance operations.

Architecturally unique, the building stood in a one-foot deep reflecting pool 310 feet long and 175 feet wide -- the exact dimensions to equal one acre-foot, a water measure few people could visualize. To the technical types, an acre-foot might actually look like 325,900 gallons; others might better understand it as a football field one foot deep. Even more descriptive, however, is the fact it is enough water to serve two Southern California families for a whole year. In Long Beach, the reflecting pool surrounding the Department's new building served as a "measuring cup" for this most frequently used volume measurement in the water business as well as a symbol for the business of this building.



Another exciting architectural feature at the administration building was the reflecting pool fountain that went into operation December 1964. Designed to send water spouts

skyward as much as 15 to 20 feet, it also created a magnificent night-time shower of color as amber, blue, red, and green lights played on the waters while merging into 14 color combinations that changed every seven seconds. The remarkable fountain spouted 350 gallons a minute, but while attracting much eye-catching attention, it also served a functional purpose as part of the building's air conditioning system.

The Department, ever fiscally alert, was able to cover the costs of the building with proceeds from the sale of Water Department land to the California Highway Department for the right of way required to construct a Long Beach segment of the I-405 freeway.

With the fiscal year, 1960-61, the Department began its second half-century of water service to the residents of Long Beach -- its 50th anniversary of municipal ownership. In 1911 when the city bought out the previous private water companies, the Department was serving 20,000 consumers. Fifty years later, it was serving 349,500. In 1911, production was 500,000 gallons a day; in 1963 it was 50,000,000 gallons a day.

One on-going threat for the Department had been a declining supply of underground well water as demand in the Greater Long Beach area burgeoned. As the amount of water pumped continued to exceed the amount replenished by nature, the Department's concern grew. The total rainfall in 1960-61, for example, was a mere 3.39 inches. In an effort to counteract the serious overdraft of the Central Basin aquifers, in 1961 the Department saw the establishment of the Central and West Basin Water Replenishment District. The District would buy water from the MWD paid for with a pumpage assessment on the producers and spread the water underground to try to keep the system in balance.

Probably the most creative, cooperative, and effective program to emerge during the decade related to this problem of future water supply and protection of the city's water rights. The Department, long dependent on Colorado River water to supplement



local well water, faced the serious threat of losing that source depending on the outcome of an appeal then before the U. S. Supreme Court in the case of Arizona vs California. Of even more

imminent concern, however, was the problem resulting from excessive pumping of well water by cities and districts north of Long Beach. The basic origin of Long Beach well water is the San Gabriel River. As cities above the Whittier Narrows in the San Gabriel Valley, who could get to the water first before it ever reached Long Beach, began pumping their wells in earnest, the water table in Long Beach fell lower and lower bringing with it the threat of salt-water intrusion.

As a result, Long Beach, the Central Basin Municipal Water District, and the city of Compton had filed a lawsuit in May 1959 against most of the water producers in the San Gabriel Valley in hopes of preventing continued pumping overdraft. Such lawsuits, however, typically could take up to 15 years to litigate. To speed the process, the plaintiffs created a negotiating team to seek a settlement and appointed Long Beach Water Department General Manager, Brennan Thomas, as its chair. On September 18, 1961, Thomas had indeed negotiated an agreement among the parties and on September 26 all had signed the Principles of Settlement that established a voluntary reduction of pumping until the court could set permanent controls to restore and protect the underground water table. The final agreement and stipulation for judgment was signed by all parties and filed with the court on February 10, 1965.

The precedent-setting agreement validated a major legal principle of common supply: Long Beach and the other plaintiffs, although at the end of the geographic chain, were to be assured their proportionate share with cities nearer the source. In effect, they were guaranteed 93,600 acre feet annually from the San Gabriel River system or about 20,000 to 25,000 acre feet more than they had been getting. Brennan Thomas, acknowledged as the agreement's father, received widespread recognition.

Further, all entities were required to reduce their pumpage by a maximum of 20 percent. Although hundreds of entities had been pumping water in the basin, 41 producers accounted for 86.7 percent of the total. The decreased pumping for Long Beach drastically shifted its proportionate mix of purchased Colorado River water to locally pumped well water. In the first quarter of the 1962-63 fiscal year, the Department had purchased 26 percent of its water; by the second quarter, it had purchased 45 percent. To meet the needs of those producers without MWD access, MWD members created an exchange pool from which they sold Colorado River water to non-member producers at \$2/acre-foot above their cost. The price of an acre-foot, however, jumped from \$29 to \$40 between 1962 and 1965. On the plus side,

the staff noted the Virginia Country Club test well had returned to its highest static water level since 1955. The water table rose from 127 feet in 1962 to 69 feet in 1965.

A major capital investment in the early 1960s was the complete modernization of the Citizen's Pumping Station. The four new powerful, submersible electric pumps could lift 18,000 gallons of water a minute from the treatment plant where the water had been purified to the tanks on Reservoir Hill where the water was stored. The pumping station equipment controlled the output from each of 40 wells, regulated the correct proportions for the mixing of Colorado River water and local well water, handled the filling and discharging of the reservoir tanks, and maintained a 24-hour oversight of nearly 50 million gallons of water that flowed through the Long Beach system every day. From a central control panel, the unique new automatic telemeter control system could instantly turn more than 20 wells on or off to provide maximum emergency control. Removing the need for repairmen to do the work manually on site, the technology could eliminate as much as an hour in dispatch time. In most emergencies, an hour is a critical period of time.

In 1962, with the purchase of the Fairacres Water Company for \$61,919, the Department completed its acquisition of all the smaller privately owned water companies within Long Beach. The acquisition included 750 new subscribers and six miles of mains.

For decades, employee safety was one of management's most frustrating problems. Despite education programs, employee workshops, training sessions and many other strategies, serious accidents kept occurring. Then, in fiscal year 1962-63, the Department recorded its first year with zero lost time from accidents. By 1964, the Department had recorded 500 consecutive days without an accident -- the result of an aggressive safety program to eliminate hazards and maintain among the employees a strong awareness about accident prevention. The accident prevention committee and the employees safety committee met regularly, reviewed potential accident situations, and assured that every accident would be thoroughly reviewed. The California section of the American Water Works Association honored the Department with its Award of Honor for this outstanding safety record.

A major new thrust for the Water Department beginning in 1962 and ongoing through much of the decade was a program it had never before undertaken: a concerted, structured, multi-media effort to communicate with its users. The goal was to increase public awareness of

all that is involved in getting clear, pure, tasty water to flow from their kitchen sinks every time they opened the tap. Using print media such as the American City Magazine and the local Press Telegram, the Department got out stories of public interest: the new administration building, service enhancements, legislative activity, and how the radio-controlled emergency crew could quickly restore service after an emergency. General Telephone Company bought creative, eye-catching ads in most of the state's major newspapers featuring the Department's use of telephone lines for its sophisticated telemetering project. Even the annual reports were redesigned with a larger format and a writing style consciously aimed at improved readability and clarity that brought high praise from customers.

Another on-going public information program featured Department staff interviews during the weekly City Employees Association radio program aired on local radio station KFOX. On another front, a "speakers' bureau" was successfully getting key staff out to address service clubs, Chamber of Commerce committees, and community groups with the story of Long Beach water. In cooperation with the school district's water-study unit, the Department offered guided student tours of all the water facilities from the treatment plant to the maintenance yard, the pumping station to the reservoirs.

To build Department identity all over the city, everything related to the Water Department started popping up in the new blue and white color theme and, wherever possible, displaying the new round logo with its wavy blue lines representative of water. Field personnel wore distinctive new uniforms displaying the logo and the employee's name -- a reassuring image for home owners who may find emergency crews on their property at any hour. The previously all-black service trucks were repainted white with the blue logo appearing boldly on the doors.

The Alamitos Hill reservoir tanks, always a landmark there 200 feet above sea level, got an identity face lift when painters added Long Beach Water Department to each tank in 8 1/2-foot blue letters making them clearly identifiable from Pacific Coast Highway, the San Diego Freeway, or any aircraft landing at the Long Beach airport. Lastly, the Department installed



large, distinctive, illuminated signs at four major sites: the control center, the maintenance building, the administration building, and the treatment plant.

The Water Department, uniquely among city agencies, has owned vast amounts of land throughout Long Beach, in large part acquired with the purchase of private water companies but also often bought in excess of need to protect water rights when drilling new wells. As needed, the Department has always made the use of its land available without cost to city and public benefit groups. In 1965, of its total holdings of 1,037 acres, 886 acres were in non-water use. The Long Beach airport, alone, occupied just shy of 470 acres of Water Department land, but Water Department land also supplemented Stearns, Heartwell, and El Dorado parks, and was freely made available for fire stations, libraries, Long Beach Day Nursery, the Girl Scouts, and numerous other public purposes. Nonetheless, the Board's long-standing policy has been to return its surplus land to the city tax rolls whenever possible. In 1962, the Board identified 64 acres of surplus land and embarked on an exciting program it called "Sixty-four for '64" -- the development of a 64-acre industrial park subdivision to be completed by 1964. Airport Industrial Park, ideally located near the San Diego Freeway and the Long Beach Airport, was divided into 41 parcels of industrial land north and south of the freeway between Redondo and Temple Avenues plus 2.8 acres for parking and 2.8 acres for a heliport.

The first occupant, Bel-Toptex, a manufacturer of safety helmets, moved in November 1963. By 1965, the parcels were completely sold but for five lots. The project, when fully developed, was expected to create 3000 jobs with estimated total annual earnings of \$21 million.

The decade of the 1960s also saw several research projects jointly executed with other institutions, the expansion of Department services, and several innovative maintenance programs. In cooperation with the American Water Works Association, staff participated in a research program to determine the optimum time for servicing or replacing water meters to assure minimum servicing and maximum accuracy. Another project, a one-year microbiological study of local water sources completed in 1965 by a research team at California State

University Long Beach, concluded the city's water supply "showed no bacteria of any consequence to public health." In 1962, the Department began a program to line existing cast-iron mains with cement mortar to correct inner lining corrosion. The process resulted in savings of between 50 percent and 90 percent over new pipe replacement.

The Department's anti-corrosion measures initiated during the decade proved very successful in extending the life of plumbing fixtures. An anti-corrosion conference the Department hosted in 1965 attracted many from the plumbing and building supply industry, municipal building administrators, and water agencies staff. Anti-corrosion research became a full-time program in Long Beach.

The new maintenance building at the Control Center on Redondo Avenue provided facilities for the full maintenance of a 100-vehicle fleet including service shops for welding, automotive paint, and metal work, and a fully equipped meter shop for repair, testing, and restoration of water meters.

For the Department's customers, one of the most popular new services has been providing each household with a personal basic supply of bottled water during any temporary service shut down for repair and maintenance. Initiated in 1964 as the "emergency supply of water to satisfy need" program, it acknowledged the inconvenience to users when service must be interrupted by providing them with at least enough water for such basics as their morning coffee and tooth brushing. The service was an instant success.

November 1, 1967 marked the retirement of the Department's much respected General Manager and Chief Engineer, Brennan Thomas, culminating 44 years with the Long Beach Water Department where he began his career as a surveyor. The Board appointed C. Kenyon Wells as the new General Manager. He served in this position for one year. Following Wells, Clyde Moore was appointed as General Manager. During the decade, the Board itself experienced a number of resignations, term completions, and new members. In 1961, Everett Houser joined the Board. However, he served only one term, resigning in 1965. That same year, commission member Ross Hall also resigned. He had served since January 1956 and had been twice elected President. Joining the Board in their stead as of June, 1965 were Robert McNulty, owner of a taxi company, and James Willingham, owner of a local automobile agency. Robert Mulvey, co-owner of a blueprint company, was appointed to replace Fred

Dean, whose term expired July 1965. In 1967, James Willingham resigned and attorney James Munholland was appointed to fill the vacancy. Bernard P. O'Hare joined the Board in August, 1969 to the seat formerly held by Oliver Speraw whose term had expired.

As the decade was closing, the Department was eagerly anticipating the completion of the California Water Project -- a massive undertaking nearly 15 years in the planning and construction. It was to bring excess water from Sacramento and the San Joaquin River Delta in northern California 450 miles via the California Aqueduct to the state's arid south. By the early 1970s, the project would be bringing 1.8 billion gallons of water daily to Southern California where the Metropolitan Water District would administer its distribution and sale to its members.

Although the city's residential growth curve was leveling off, the Water Department would see major technical advances and many unexpected new challenges during the next several decades. Long Beach was changing and the Water Department clearly intended to change with it.

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CHAPTER 4

The Remarkable New Water Source The 1970s and 1980s

Overview

In the world of water professionals, certainly the most exciting event of the decade of the 1970s was the completion of the California Water Project. Conceived and promoted by Governor Pat Brown years earlier, in 1960 the voters had approved a \$1.75 billion bond issue for the project. In 1973, with the initial facilities completed, water delivery to Southern California began. This engineering feat brought surplus northern California water south over a nearly 500-mile route. Despite the new water source, however, the Board had well founded reasons for doubt about the long-term availability of water, a reality that spawned a remarkable conservation program focusing on the use of reclaimed water.



Beginning with the mid-1970s, Long Beach found itself on the threshold of a major demographic shift. Following the cessation of hostilities in southeast Asia, many Viet Nam refugees resettled in the Long Beach-west Orange County area and after 1975, waves of Cambodian refugees found safety and opportunity in Long Beach. The downtown was slowly experiencing an economic and retail resurgence. The Long Beach Grand Prix auto race along the downtown shoreline kicked off to a shaky but exuberant start. After just a few years, however, it had become an internationally acclaimed annual event. A major new hotel, the Hyatt, was built adjacent to the convention center. Gradually new restaurants were opening on Pine Avenue and, of course, with new development came the need for additional water services. By 1989, the downtown skyline had changed considerably with the addition of Phase I of the 27-story, \$550 million World Trade Center.

The Water Department had celebrated two landmark anniversaries: In 1981, the occasion of 50 years since the voters amended the city charter to create the independent regulatory Board of Water Commissioners to be solely responsible for attending to the city's water needs and 1986, the occasion of 75 years of municipal ownership of the Water

Department. During that time, it had become the fifth largest municipal water Department in California. Among its key issues would be establishing a cogent main-replacement program, contending with the onslaught of EPA water quality regulations, and keeping up with the safety program. The period of the 1970s and 1980s was one of extraordinary growth and extraordinary technical development. The Department continued to redesign many tasks for computer monitoring and data management rather than manual handling, which resulted in greatly increased efficiency and economy. As an example, in 1950 the Department provided 55,355 service connections with 270 employees. In 1981, it could serve 85,000 connections with 163 employees.

On the national political level, the United States during the early years of this period was coming to terms with a number of critical issues, among them the first time ever a president resigned his office. Objections to the Viet Nam War were growing louder and more violent. Riots had devastated many of our cities across the country and student unrest on college campuses left many in our academic administrations bewildered with how best to respond. Fortunately, by the close of the 1980s, calm had returned. In Long Beach, residential and commercial investment reflected a greater optimism although the country in 1987 had experienced a severe economic downturn from which it was only beginning to emerge by the close of the decade.

The California Water Project, formulated as the California Water Plan in 1957, brought about a unique and massive shift in the state's water supply. Historically, annual heavy rains and snow melt in the high Sierras and much of northern California brought spring flooding to the region while Southern California, a desert environment, in a typical year could receive only about 12 inches of rain. Construction on the Water Project throughout the 1960s created a nearly 500-mile system to permit redistributing excess northern water to the arid southern counties. In April, 1972 this water began filling Lake Castaic and, at project completion in 1973, water was delivered into its terminal reservoir, Lake Perris, for distribution to Southern California through the Metropolitan Water District.

Despite this added supply of fresh water, Long Beach was not to be free of anxiety about availability of water. Droughts and dry years were interspersed with wet years. For example, 1978 was a drought year but 1983 was a very wet year and in 1986, during a single ten-day period, in most of California the downpour of rain and snow was equivalent to the entire average annual water supply. On the other hand, a record-breaking 107° in Long Beach on July 1, 1985 caused the greatest one-day consumption at 102 million gallons. The uncertainty of nature caused the Board to establish several very important new policies, among them a conservation and reclamation program, a well-drilling program, and during the later years of the 1970s, participation in both the MWD's interruptible water pricing program and the Central Basin Replenishment District's in-lieu replenishment program.

The well-drilling program to replace old, inefficient wells began in January 1981 with the completion of Commission well #14, the first new well drilled in Long Beach in 20 years. Commission well #15 came into service in 1982 producing 2600 gallons/minute. Commission wells #16 and #17 were completed in July, 1983 and #18 the following year. In all, the Department drilled seven new high efficiency wells, which allowed them, by 1984, to abandon 15 old, inefficient wells and reduce the energy needed by half.

The second program, one that protected ground water, took advantage of an in-lieu groundwater replenishment program first offered toward the end of the 1970s by the Central Basin Replenishment District. The program was available to the Department throughout this period. It provided very favorable financial incentives to purchase imported water in lieu of pumping ground water. The MWD offered a similarly intentioned program, the temporary Interruptible Water Pricing Program, offering reduced rates for departments that agreed to interruptions of like amounts should shortage periods occur. The additional purchases from the MWD restrained the need to pump ground water.

In 1982, the Board authorized the free distribution of retrofit water conservation kits to encourage public awareness and conservation practices. And on July 16, 1987, the Board adopted the city's emergency water conservation plan. This put into effect a number of measures to encourage conservation, among them meter testing and maintenance, bill stuffers, press releases, cable TV programs, speaking engagements, and distribution of free kits to reduce flow in toilets and showers.

However, the most effective conservation program by far was the reuse of reclaimed sewage water for irrigation of parks and golf courses.



Los Angeles County Sanitation District had built a sewage treatment plant near Willow Street and the 605 freeway in El Dorado Park on land donated by Long Beach and had agreed to provide that reclaimed water to the city. The drought of 1978 persuaded the Board

in 1979 to pursue a strategy for irrigating El Dorado Park with reclaimed water as a substitute for using potable water.

As if the ever-present threat of extended drought conditions were not incentive enough, two other events supported the Board's apprehension about potential water shortages. First, the Supreme Court had clearly confirmed California's responsibility to abide by early agreements with Arizona concerning access to Colorado River water. In 1985, the Central Arizona Project, as the agreement was called, was to take effect and would reduce Southern California's access to that water source by 60 percent. Second, the raging political controversy over construction of the Peripheral Canal left that decision very much in doubt. Were it built, the canal was expected to divert Sacramento River water across the upper San Joaquin Delta to the State Water Project intake pumps to increase the flow of water south. However, bearing out the Board's concerns, at the election of June 8, 1982 the voters unequivocally defeated the measure. With that additional water source thwarted, the Board realized conservation was going to be essential and particularly the Department's project to irrigate parks and golf courses with reclaimed water.

The Department applied for and received a state permit to use reclaimed water for irrigation and received also a state grant to fund the project. The Sanitation District helped by upgrading the sewage treatment process to meet all the Title 22 health standards. On August 21, 1980, the Department dedicated Phase I of the project to irrigate El Dorado Park west. By June 1981, the Board had authorized a design contract to extend reclaimed water irrigation to El Dorado Park east, Heartwell Park, and Skylinks golf course. Phase III was operational by the summer of 1983. Much of the cost for extending the water lines and pumps was covered by a state grant for up to \$2.5 million. An added bonus in 1985 was MWD's designating the

extension of the reclamation program for “local project” funding. With that, the MWD agreed to pay the Department an annual amount equal to its avoided energy cost on the State Water Project for each acre-foot produced by the local project.

Every year added more lines and more sites; by the close of 1988 the Department was supplying 1.2 billion gallons of reclaimed water annually to 19 sites including public and private golf courses, California State University, city parks, the community college, the Naval Hospital, and at last, with a sufficiently improved technology, to the oil islands for oil-well injection to increase oil recovery. In all, the reclamation program operating at peak was providing an estimated 10 percent of demand and making a major contribution to the Department’s conservation program. In 1989, the American City and County Magazine honored the water reuse program with its Award of Merit for outstanding achievement in local government.

While, of course, water supply was of the utmost importance to the Board and staff, water quality was no less critical. Annual budgets never stinted on necessary upgrades for the laboratory. In 1978, the analytical chemists were testing 5000 samples a year for biological and trace inorganic compounds to assure water quality complied with or exceeded state and federal standards. However, by 1981, EPA and California Health Department regulations had become far more complex and the chemists had quadrupled their sampling to 20,000 annually. The lab had been recertified to handle complete chemical analyses and it was among the first in the state to use gas chromatography to monitor trihalomethanes as well as increased numbers of organic compounds. By 1985, it had acquired another major piece of equipment, a graphite furnace accessory to the atomic absorption spectrophotometer for mineral analyses.

While the laboratory was there to confirm the drinking water’s purity, it was the treatment plant that made it happen. The plant was modified regularly to maintain the water’s chemical balance as demanded by state and federal laws. During the 1970s, the state health Department tightened its regulations, particularly those concerning free chlorine as a potential carcinogen. As a consequence, the Department began the conversion from chlorine as a disinfectant to a combination of chlorine and ammonia. By the end of the decade, the plant management had followed through with the necessary changes and had purchased the equipment to store 10,000 gallons of liquid ammonia along with the appropriate pumping stations to treat the water with chlorine ammonia rather than chlorine alone. Further major

changes in 1982 both improved quality and reduced costs. By 1984, the Department had fully implemented the chloramine treatment to automatically add chlorine and ammonia. To comply with the trihalomethane (chlorine) regulations, the treatment plant filter beds converted to dual media using anthracite coal over fine sand and gravel.

The treatment plant in 1985 benefited from a number of additional improvements. A new 1200 KW generator was installed for emergency backup should there be a power failure at any time. Included among other upgrades were central air conditioning, a new roof improved electrical distribution equipment and motor control centers, and a new radio frequency telemetry system. In 1987, the obsolete high-voltage substation was upgraded with modern electrical switchgear equipment. Additionally, staff replaced twelve 24-inch influent and backwash gate valves with more efficient hydraulically operated butterfly valves, acquired two new sluice gates for the filter beds, and a liquid zinc pump station went online.

One of the most significant capital projects during this period was the planning and construction of the new Operations Service Center at a cost of \$10 million. It required razing all structures at the headquarters location except the Administration Building. The new Center replaced the unreinforced masonry structure that had been serving the Department since its construction in 1929. Over the years, as the Department grew, according to former General Manager Mac McWilliams, they just added more buildings but with no strategic layout and very little attention to efficiency. The new plant could be laid out with careful thought as to the most logical and efficient placement for each task whether the paint shop or the supervisor's office.



Historically, the earlier Service Centers, as described in the 1986 Annual Report were: “ the old ‘railroad station’ at 5th and Alamitos that served as the

Department’s yard and office in 1915, the ‘Electric Plant’ reservoir and pump station just north of the City Cemetery that served until 1930, and the

recently demolished ‘Service Plant’ that performed for more than 50 years despite the damage sustained during the 1933 earthquake.”

The Department decided to build the new facility in phases so that work could continue during construction but by November 14, 1985 the project was well enough along for the

Board to hold a formal dedication ceremony. The actual completion and official opening occurred on February 27, 1987.

The emphasis on ongoing maintenance and rehabilitation of the Department's infrastructure led to a 1979 consultant study for the replacement of the mostly unlined cast iron water mains (some in service since the early 1900s) with asbestos cement. The Board adopted the consultant's recommendation and began a program to replace 30,000 feet a year for ten years through 1990. Digging up city streets to replace water mains is never popular with the public unlike another maintenance project that slipped by with little comment. In fact, consumers may have assumed it was more aesthetic than functional when, in 1983, the Department repainted all the reservoir tanks with their bold, highly visible blue lettering to modest, subdued beige.

The Department began another noteworthy major maintenance and rehabilitation project in 1987 to restore full operational capacity to the Alamitos Reservoir. It required the removal of 15 obsolete and broken gate valves and replacement with four 24-inch and eleven 30-inch butterfly valves. The three-year reservoir project also involved the particularly difficult challenge of replacing, with the help of a geared operator, a 42-inch, 21,000-pound gate valve with a new 42-inch butterfly valve.

With its undiminished concern for efficient, cost-effective record keeping, the Department continued its policy of converting from a manual to a computer record-keeping system. In 1978, they purchased a mini-computer with which they began the programming that would by the following year provide for total inventory control; financial and budgetary accounting; fixed assets; and in-depth budgeting analysis by cost center. A further advancement, put into service March 8, 1984, were the new and totally redesigned Gate Atlas books to complete one phase of a program to computerize the records and the operating and maintenance data for the gate valves that control the water system.

The ongoing emphasis on safety continued unabated and had significantly decreased accidents. In 1978, the Department recorded a remarkably low accident frequency of 2.96 as compared with a national frequency of 37.9. A second safety incentive program, promoted with the slogan "We take safety seriously," was able to announce on November 5, 1984 only three lost-time accidents in an eight-month period -- half the number of the previous period.

The program, which provided 42 seminars and training classes for 162 employees, also focused on increased awareness with awards of hats, T-shirts, golf shirts, and jackets.

Although the Department's primary business has always been water, with more than 60 leases and permits on an excess of 700 acres of Department-owned properties, land has certainly been a major concern for the Board. While the Board made much of that land available at no cost for parks, golf courses, the Long Beach airport, and other non-profit agencies, some was leased commercially. The revenue in 1980 from these leases totaled \$300,000. However, when Community Hospital in 1982 approached the Board with its desire to buy the 8.75 acres it had been leasing from the Department at \$1.00 a year for the past 58 years, the Board readily agreed. The hospital agreed to a sale price of \$2.5 million to be paid over five years interest free.

The hospital sale was the first of several major land sales the Board approved early in the decade of the 1980s. Another involved 43.51 acres on the west side of the airport to McDonnell Douglas for almost \$5 million in 1982. At about the same time, the Redevelopment Agency was able to purchase a parcel on Redondo Avenue for \$512,839, which it transferred to the U.S. postal service for use as the main post office. In 1986, the Board executed a second sale to McDonnell Douglas of 17.6 acres for more than \$2 million that allowed the aircraft giant to do a major expansion to build C-17 long-range transport planes under contract to the Air Force.

Another responsibility only peripherally related to its primary role as water provider was thrust on the Department in 1988 when it agreed to take over the operations and management of the sanitary sewer system. According to Bill Williams, a Board member during the 1980s coincidentally served also on Mayor Ernie Kell's Blue Ribbon Charter Revision committee. Williams recalls it was his suggestion to the charter revision study group that triggered the sewer system transfer from the Public Works Department. The city had been facing severe budget balancing problems ever since the voters' approval of Proposition 13 in 1978, which had drastically reduced local property taxes. With city revenues declining and citizen demands increasing for such high priority, high cost items as public safety, the city's general fund was gravely inadequate to the needs of proper maintenance of a sanitary sewer system. Not only was the Water Department self-supporting with no need for the general fund to meet its budget,

it already maintained a massive pipeline system not unlike the sewers network and had in place all the necessary managers, engineers, and field people. It was a good fit.



The first year after the transfer, 1988-89, the saving to the general fund was nearly \$750,000. The Department was able to absorb the work with no added staff except the small crew who were transferred from public works. Department staff felt certain they could manage funding for both operations and maintenance with a small additional sewer fee, which the City Council adopted on August 30, 1988, effective November 1, 1988. The Department quickly developed a comprehensive deficiency study on which to base its sewer capital improvement program, a major part of which was extensive replacement of deteriorating concrete pipe. Everyone agreed it had been a very successful transfer.

One other city program fell to the Department in the 1980s as a result of Proposition 13-related budget cuts. In 1985, budget constraints began to affect the Fire Department's ability to perform the mandatory flow tests for every hydrant every year. It was an easy and logical transition for the Water Department, with a revenue source independent of the general fund, to take over the ownership and maintenance of the city's fire hydrants. The two Departments, obvious allies with their mutual interest in water, have worked closely together particularly as growth requires adding more hydrants every year. With every new main, they survey the area to assess the adequacy of the existing hydrants to serve that level of development. The city has never been without adequate water for fighting fires and is justifiably proud of its Class I Fire Department and its Class I Water Department.

To keep the public informed about water and the Long Beach Water Department, the staff produced and widely distributed four colorful and attractive brochures during 1987 and 1988. "Water Reuse in Long Beach" described the reclaimed water irrigation system and treatment process. "Water Conservation" described the need for increased water awareness and suggested ways to conserve. The third brochure, "Water for Long Beach" briefly described the Department, its operations, its history, and its sources for water. The final

publication, "Water Quality in Long Beach" explained the process for treating and testing our drinking water.

During the years of the 1970s and 1980s, the Department experienced several major management changes and the Board had its customary turnover as a result of term limits (the voters had approved a charter amendment limiting all board appointments to two terms) and resignations. General Manager Clyde Moore retired effective June 30, 1979 after nearly 39 years with the Water Department. To replace him, the Board appointed Larry Larson who had been Assistant General Manager and, earlier, Division Engineer for Water Supply and Distribution.

Leaving the Board in 1973 was Glen A. Gerkin and appointed to fill that seat was Carl E. Gallman. The first woman ever to serve, Ida Frances Lowry, was appointed in 1975. In 1976, attorney William A. Williams was appointed to the seat previously held by Robert McNulty who resigned from the Board. That same year, in August 1976, Sam Rue, the manager of Buffum's Department Store took a place on the Board following the retirement of James Munholland. In 1979, Sam was also appointed to be Long Beach's regular representative on the Metropolitan Water District Board replacing Lloyd Leedom who had recently retired after having ably represented the city and the Board for more than 30 years. Before the start of the decade of the 1980s, the Board membership changed just once more as Bernard O'Hare in 1979 completed his second term and Kenneth Davis was appointed to replace him.

On the management side, in 1982, two of the four divisions were elevated to bureaus. Don Houser was appointed Bureau Engineer and William T. McWilliams Bureau Engineer of Water Supply and Distribution. Another management-level change the following year moved Robert Cole to the position of Financial Management Officer in August 1983 on the resignation of Howard Rattner.

In July 1983, on the retirement of Carl Gallman, the Board welcomed Charles Jones, a retired Long Beach Fire Department administrator. Two years later, Sam Rue resigned from the Board and Halcyon Ball, a Long Beach businessman, was appointed on June 11, 1985 to complete his term. At the same time, with the completion of her second term, Ida Frances Lowry retired and maritime attorney Leo J. Vander Lans accepted appointment in her place.

For the next two years, the Board membership remained stable until 1987 when William A. Williams retired upon completion of his terms and Henry J. Meyer, a Long Beach restaurateur and developer, filled that vacancy with his appointment on August 20, 1987.

With a strong, committed Board, a city seemingly on the threshold of economic opportunity, and an enthusiastic, capable staff under the leadership of Larry Larson, the Department was set to enthusiastically enter the last decade of this millennium.

CHAPTER 5

Closing the Millennium, Bigger and Stronger The Decade of the 1990s

Overview

Throughout this last decade of the 20th century, all attention was focused on the excitement of waking one morning to the year 2000. The ubiquitous “Y2K” appeared everywhere, most often couched in ominous overtones to follow the last midnight of the 20th century: would the stock market crash, would airplane or cruise ship schedules suddenly go awry mid-transit, would computers that regulated the banking industry and international investment markets fail from faulty programming? Obviously, we went through the transition flawlessly despite the doomsayers and their persuasive fear-engendering prognoses.

Seismic turmoil hit the Los Angeles region on January 17, 1994 with the 6.8 magnitude Northridge earthquake. Freeway segments collapsed, buildings collapsed, many families were suddenly homeless. The Long Beach Water Department fortunately was able to provide a rapid response to Los Angeles in need of pipes and equipment to handle one element of the emergency.

Internationally, the decade opened with the United States and allies defending the tiny, oil-rich nation of Kuwait from invasion by Iraq. “Operation Desert Storm” succeeded in routing the invaders while making Americans very aware of our international interdependence.

In Long Beach, as the new decade of the 1990s was about to begin, the City Council was ready to adopt the city’s first ten-year strategic plan, Long Beach 2000 -- a comprehensive, citywide effort that had involved a full year of community meetings and staff input.

With much anticipation, plans were initiated and construction completed for the new Aquarium of the Pacific. Needless to say, a project using that much water (although primarily seawater) would be closely associated with the Long Beach Water Department. As with most new development, this project required major enlargements to the servicing water mains. The Aquarium was the



beginning of a projected massive development along the downtown shoreline. The other projects, such as Queensway Bay and the Pike residential and commercial development had yet to emerge by 2000 and a Disney entertainment zone had been both proposed and abandoned during the decade. The Queen Mary came back under the city's aegis from the Port of Long Beach and by 1995 was beginning finally to emerge as the major Long Beach attraction it was intended 35 years earlier.

The voters of California expressed their belief in the essential role water plays in this state when in March, 2000 they approved the largest water bond issue ever to appear on the ballot. This \$1.97 billion bond authorization will have myriad applications throughout the state as promised by its umbrella legislative title, The Safe Drinking Water, Clean Water, Watershed Protection, and Flood Protection Act.

The country during most of the decade was in a growing state of economic euphoria. Post-election policy, triggered by the 1992 presidential campaign by-words, "It's the economy, stupid," took off with real attention to jobs and personal income. Strong corporate growth in most sectors, particularly electronics and what had been dubbed the "dot-com" industry, resulted in a stock market reaching record highs and unemployment reaching record lows. The new national policy of "welfare to work," abetted by ample job opportunities, was lauded for reducing welfare rolls and restoring self-esteem. The good economic times seemed the new norm in California and the United States overall.

For the Department, the overriding challenges would be persistent decreasing water supplies, in part the result of the longest drought in city history, ever more stringent state and federal water quality regulations, and construction of a new state-of-the-art water treatment plant.

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The decade opened to a major unanticipated change in Department leadership. Larry Larson, who had served for 11 years as General Manager and had been with the Department for 26 years, became critically ill late in 1989. He retired as of August 26, 1989 and sadly, died on October 8, 1989. The Board appointed William T. McWilliams, former Assistant General Manager, to the top management post but he retired at the close of 1989. With the calendar

turning to January 1, 1990, the Department management was entrusted to Dan Davis, former Bureau Engineer and as his Assistant General Manager, the Board selected Bob Cole, previously Financial Management Officer.

With Nature setting the scene, the Water Department was compelled to embark on some of its most dynamic programs ever. By 1990, the city was well into the fourth year of a critical statewide drought (with yet several more years ahead) that led to the development of a remarkable, multi-faceted conservation program. As Dan Davis notes, we in Southern California are always in a drought phase; however, this one was not due to a lack of water in Southern California but to a lack of water in Colorado watersheds and the California aqueduct - the sources of our imported water. Despite a wet March in 1991, Oroville Reservoir, the state's second largest and the major source of Southern California's State Water Project supply, was at less than 50 percent of normal.



The Department developed a conservation and water-use plan that successfully reduced consumption by as much as 30 percent. It established reasonable household allotments, laid heavy penalties on excessive users, and distributed strategies for reducing water usage. Among its conservation activities, the Department distributed more than 20,000 water-saving kits and 25,000 water-only-on-request cards for restaurant tables, did water audits of its ten largest users, patrolled looking for “water wasters,” and provided local cable TV with conservation videos to air. In December 1990, the City Council adopted an ordinance requiring all new construction to use ultra-low-flow water closets, urinals, and water-saver shower heads. But not until 1994 did the Board approve its first toilet retrofit program to replace, free of charge, ordinary facilities with 1000 ultra-low-flush toilets for low-income seniors and low-income disabled.

Households who followed the Department's recommended guidelines often found they could decrease daily consumption from as much as 600 gallons to a mere 200. The outstanding conserver, however, was Water Commissioner Charles Jones who reduced his family's daily consumption to 15 gallons. The Board had adopted the Emergency Water Conservation Plan

in February 1991 and it stayed in place until March 1993 when the drought was finally declared over. During the drought of 1976-77, the city had experienced even less water availability, but in terms of duration, six years, this was the longest dry period in modern California history.

Responding to the drought, the MWD initiated a seasonal storage program to reduce purchases during the peak summer period. It reduced the per acre-foot cost of winter water purchases to encourage its members to buy during months of ample supply and store the water for summer use. On November 20, 1990, the MWD established the “Incremental Interruption and Conservation Plan” setting a monthly conservation target for member agencies. Long Beach, by June 30, 1991, was receiving 3000-acre feet below its previous allocation. In 1992, the Board faced the problem of managing on two-thirds the normal supply of imported water. Programs and priorities shifted as many staff members were reallocated to conservation and public education programs.

While conservation education, public awareness, and low-water-use plumbing fixtures were essential to managing during the drought’s severely decreased water supply, by far the most effective program to conserve potable water was the growing use of reclaimed water, a program begun in 1980. By 1991, Wilson High School, freeway landscaping, and the Administration Building’s reflecting pool had been added to the projects using reclaimed water. The reclaimed-water master plan called for a doubling of the system. In acknowledgement of the program’s long-term potential, the California Water Resources Association awarded the Department its Edmond G. (Pat) Brown Resources Leadership Award in 1993. By 1998, the reclamation plant was producing and the Department was distributing 1.4 billion gallons of reclaimed water annually with new uses ever emerging including such new industrial uses as chemical milling of aircraft parts, aircraft washing, and cooling towers. And in 1998, the Department’s Phase I Reclaimed Water System Expansion Project was one of only four approved projects nationwide for inclusion in the 1999 federal budget as a Presidential line item.

With the availability of even more extensive treatment of the reclaimed water, two major additional uses fell into place allowing its substitution for vital potable water. One program, finally perfected after research and study since 1993, is the construction (begun in 2000 for completion in April 2002) of the 3.5 million gallons-a-day reverse osmosis Alamitos Seawater Barrier Reclaimed Water Treatment Plant. Partially funded with a federal \$1.5 million grant, the

plant will treat tertiary effluent to quality standards needed for injection into the Alamitos Seawater Intrusion Barrier. Upon completion, the project will replace 3000 acre feet of potable water and eventually can substitute for the 10,000 acre feet needed for 100 percent of the barrier water.

The second breakthrough in the substitute use of reclaimed water occurred in 1997 with the signing of a User's Agreement with the THUMS oil operating company. Highly treated reclaimed water became suitable for injection into the oil fields to control subsidence and to increase oil production. When complete this project alone will double annual reclaimed water use from 4000 acre-feet to 8000. The oil well project received the California Water Awareness Program, Water Conservation Award for 1997. It also received a Special Award of Merit from the WaterReuse Association of California as the first known municipal offshore oil-field injection project for ground subsidence and enhanced oil production in the world.

During the decade, the Board embarked on a number of essential capital projects including the \$2.4 million Belmont Shore sewage pump station (originally built in 1929), the \$3.3 million Operations Service Center expansion, Phase I of the seismic upgrade of the Administration Building completed in 1999 with a 50 percent FEMA matching grant, replacement of three large mainline gate valves at the J. Will Johnson Reservoir and adoption of Phase I for replacing all main line valves, as well as others separately discussed elsewhere in this chapter. However, nothing was to compare with the planning and construction of the new water treatment plant and 10,000 square foot water quality laboratory -- a project spanning most of the decade. The existing plant, at 40 years old, showed major seismic and structural deficiencies and additionally would have been unable to meet the new federal and state regulations to become effective by the close of the decade.

The new 62.5 million gallons a day groundwater treatment plant and the new water quality laboratory would be the largest capital improvement project in the Department's 83-year history. In 1991, after reviewing the conceptual and feasibility studies, the Board committed to proceeding with the construction. In 1993, they started into the final design phase. To fund the \$50 million project, the Board authorized the sale of \$47.2 million in bonds; construction began on November 3, 1994. Two-and-a-half years later, on May 1, 1997, the Department



could put the state-of-the-art groundwater treatment plant and water quality laboratory into full operation.

The demands on the laboratory seemed to be growing exponentially. Back in 1925, the federal government required testing drinking water for four contaminants. By 1962, between the federal and state governments, the list had grown to 14; in 1992 to 84; and in 1999 the laboratory's four sections: microbiology, general chemistry, inorganic chemistry, and organic chemistry were performing many thousands of analyses each year on water samples from the groundwater wells, the reservoir distribution system, selected homes, businesses, schools, and public facilities testing for more than 150 contaminants. And from all indications, the number of potential contaminants will continue to grow as will the complexity of the regulations.

The 1988 administrative takeover of the city's sanitary sewer system received the official blessing of the voters when on April 10, 1990 they ratified the charter amendment giving the Board full responsibility for the operation, maintenance, repair, and improvements of the sewers. The 1991 strategic plan identified priorities for the new section: to identify and eliminate major inadequacies, to insure the system remains self-supporting, and to insure the system will meet the city's growing development needs. Although the 1988-89 fiscal year closed with more than \$1 million net income to the sewer fund, by the following year it showed a \$500,000 loss. The small sewer fees paid by property owners kept the system healthy but between 1988 and 2000, the Department had invested nearly \$100 million in the sewer system for its ongoing maintenance, expansion to serve new development, and upgrading of those mains that were very old.



The Department sought and adopted new technologies for more efficient, cost-effective maintenance. In 1992 they started a new closed-circuit-televising program by inserting a small camera into the pipes to identify those in greatest need of repair. With the camera, staff could pinpoint mainline repair needs without having to dig up the streets. In 1994, they began managing repairs and rehabilitation with the trenchless technology of inserting plastic slip lining

into the concrete sewer mains at 75 percent less cost than traditional replacement programs while extending the life of the pipe by more than 50 years. This technique served for the Bluff Park and Naples projects. In 1999, as the downtown area looked ahead to further development, the Department began extensive rehabilitation and capacity building of that sewer system including contracting out for several trunk replacement projects. An extremely popular program has been the 1999-initiated tree-root intrusion program provided jointly with the city's Public Works Department to repair, at no cost to the homeowner, sewer damage caused by city tree roots.

As of October 1, 1998, ten years after the Department accepted responsibility for the sewer system, it also took over operation and maintenance of the storm sewer system. Sanitary and storm sewers had been managed jointly for 100 years from 1888 to 1988 but perhaps as an oversight, they were separated in 1988. The city's funding for storm sewers had fallen well behind the need when the climate phenomenon, El Nino, brought torrential rains and near disaster in 1997: flooding throughout the city, pump stations that failed to turn on, electrical systems so deficient they shorted out. General Manager Bob Cole urged the city manager to recombine the sanitary and storm sewers within the Water Department, an action that would save the city perhaps \$900,000 annually. Because the Department already had the necessary staff and equipment, Cole reasoned, he could upgrade all the pump stations, clean all the pipes, upgrade the electrical, and do preventive maintenance, much of it during slack time from sanitary sewer work. That's exactly what happened. As a result, the city has saved \$1 million a year and the storm sewer system has become an excellent one.

Few public agencies have ever generated the level of community support and confidence that the Water Department has. It has not been by accident, however. In 1994, Board President Michele Hansen wrote, "Faced with major issues, educating the public and maintaining effective communications with customers is imperative." The Board and management, particularly during this last decade of the 20th century, have indeed taken great pains to keep the constituency well informed about programs and projects through attractive, well written annual reports, public tours for the opening of the water treatment plant, water education programs for the schools, and in many ways have maintained a high profile in the community to promote water awareness.

The long drought opening the decade required enormous community cooperation. One of the most effective strategies during Water Awareness Month has been the on-going annual free distribution of as many as 3000 to 5000 ultra-low-flush toilets. The labor-intensive project has regularly received the assistance of local high school students. Customers who prefer to buy their own fixtures can apply instead for \$75 cash rebate checks. In addition, throughout the year, staff distributes up to 14,000 low-flow shower heads and thousands of garden hose nozzles and other water-conserving devices.

Among its many publications is the Department's "Water Watch" newsletter introduced in 1993 and targeted to Long Beach business and civic leaders to keep them abreast of water-related projects and issues. A 1995 brochure, "Meeting Your Water and Sewer Needs," brought together information formerly spread out among five smaller publications and won the highest award from the national City-County Communication and Marketing Association. Another prize-winning brochure describing the new treatment plant won the 1998 Communicator Award, Award of Distinction selected from among 2385 entries nationwide. The active Speakers Bureau often uses an informative 1996 video, "Showers That Water Long Beach," as an education tool describing water sources, water treatment, and Department services.

Working closely with the Long Beach Unified School District, the Department has been able to build water awareness among youngsters from elementary through high school. For the younger children particularly, the Department-funded live stage productions of the Small Change Original Theater have been a fun way for them to learn about the importance of conservation. The performers go into 66 elementary and middle schools each year, reaching about 26,000 children. The travelling troupe adopted its name to imply the program can make small but effective changes in a child's perception of water and conservation. Expanding on the importance of early education, the Department in 1995 negotiated a major collaboration along with the MWD and the school district, which for the first time involved the MWD in a commitment to provide water education programs to all grades including high school.

One of the most effective public education programs is the "Water Ambassadors" organization begun in 1995. Managed by a staff coordinator, these well informed volunteers help reach out to the community primarily as speakers about conservation and water-related

issues. In 1999 alone, they attended more than 50 Department and citywide events donating more than 1000 hours of community service. Among their most visible appearances since 1999 has been as guides and interpreters of the roles of water at the “Wave” fountain in the Aquarium of the Pacific’s Plaza area. The Board, the Mayor, and the City Council dedicated the \$2.4 million “Wave” fountain and its four water-education panels, partially funded by the Department, on July 22, 1999. The fountain pumps up to 8000 gallons a minute and was designed to simulate waves crashing onto the shore with individual bursts reaching as high as 15 feet into the air.



The Department initiated several important new projects in the 1990’s. One of these, perhaps the most significant, was seawater desalination. Since its founding, the Department never ceased pursuing evermore-reliable supplies of drinking water for the City. In the 1930’s it became one of the founding members of the Metropolitan Water District of Southern California (MWD), successfully constructing an aqueduct across the desert, bringing Colorado River water to homes and businesses throughout Long Beach. During the 1950 and 1960’s, the Department was one of the lead agencies driving the efforts which eventually succeeded in protecting the groundwater basin from overdraft and laid the foundation for the perpetual protection of this crucial water supply. The Department became a leader in water conservation and reclamation. As the cost of seawater desalination decreased and the cost of alternative, reliable supplies increased, Department experts in the early 1990’s began a serious investigation of the potential for desalination to further increase the City’s water reliability.

Working with other water agencies in the region, the Department first investigated the possibility of desalting brackish water rather than seawater, brackish water being less expensive to desalinate by virtue of it being much less saline. Several test wells were drilled. Unfortunately, it was determined that the amount of brackish water available for extraction was insufficient to justify further research or for development of that supply. In 1996, through the efforts of then-Congressman Steven Horn, the Department secured federal authorization for the Long Beach Desalination Research and Demonstration project. This “authorized” the federal Department of the Interior to contribute as much as \$20 million towards

desalination in Long Beach. Congressman Horn would later secure the first two (2) appropriations, for a million dollars each, from this authorization before leaving office at the end of 2002.

In addition to the federal contribution, the Department took a leadership role in promoting interest at the MWD in seawater desalination. In the late 1990's the City's representative on MWD's Board of Directors, Commissioner Helen Z. Hansen, through her very effective efforts, lead the MWD to take an active role in seawater desalination; first by significantly updating its seawater desalination policy principles and eventually leading to the MWD issuing a request for proposals for seawater desalination. At the time of this writing it appears that the Department will receive a significant contribution from this program for seawater desalination.

The Department's first serious investigation into producing seawater desalination centered on a partnership with a venture capital firm seeking a niche in what looked like an emerging industry. The concept was for this private-sector firm to build and own a large desalter at the site of an existing power plant in east Long Beach, the AES Alamos power generation station. This partnership began in 1999 but expired within two years. The Department soon began investigating not only the possibility of building its own seawater desalination plant, but utilizing the proprietary desalination process it was developing.

A second unusual project the Department developed was the Long Beach Water Department bottling plant -- probably the only municipal bottling plant in the nation. Its genesis was the Department's longstanding policy to provide customers with bottled water whenever repairs made it necessary to turn off service for up to a day. The Department bought that bottled water commercially although it, itself, was the producer of pure, delicious water. In fact, the city was paying about \$50,000 a year for commercial bottled water and ironically the Department was the largest single purchaser of the city's share. By 1998, that circumstance so rankled General Manager Bob Cole, he found a solution. He scouted out a bottling plant in Santa Ana, trucked Long Beach water to it and brought back Long Beach-labeled, mostly liter-sized, bottles of local water -- the same water that came from the tap.

So successful was the program that the next step was inevitable. Why not build their own bottling plant? Looking at the numbers, it was clear in about ten years the plant would pay for itself. A company in Indiana built the plant to Department specifications, tested it, took it apart, shipped all the components here and reassembled it on the site of the water treatment plant. It was 1999. The plant received FDA certification in June 2000, state Department of Health Services approval July 6, 2000, and was



dedicated here in September 2000. With their own labeling machine, the Department provides (never sells) designer-labeled bottled water for any special city occasion including Y2K, General Manager Bob Cole's retirement, and the reopening of Rancho Los Cerritos. Available in 1.0 and 1.5 liter bottles, the Department offers them to all 80 schools in the Unified School District for emergency use and to the Long Beach chapter of the American Red Cross. In 2000, the Department distributed 100,000 bottles excluding the Red Cross and the schools' emergency supplies.

In addition to the many charitable projects the staff generously supports throughout the year, 1998 marked their first annual charity golf tournament at El Dorado Golf Course. It raised more than \$8000 for scholarships to local high schools and to Long Beach Boys Town. The second tournament the following year earned more than \$9000 donated to Homes of Hope Foster Family Agency and the Children's Dental Foundation. The charity golf tournament is now firmly established.

Another unique staff program organized in 1999 is the staff's in-house chapter of Toastmasters International, "The Water Marks." The bi-weekly meetings help staff improve their public speaking skills and is another example of the "family" feeling that pervades the entire employee corps.

The Department celebrated its 85th anniversary in 1996 and gave itself a birthday present by speeding up its replacement schedule for the old cast iron water mains still in use. Of the 902 miles of mains, 333 miles had been installed between 1918 and 1939. Staff was able

to more than double the replacement schedule to 60,000 feet per year, reducing the completion time from a 57 year program to 25 years.

While the many projects dedicated to improving the quantity and quality of Long Beach water were the primary focus of the Board and the management staff, a wide range of administrative changes were also occurring throughout the decade. During Dan Davis's tenure as General Manager in the early 1990s, he created (with much persuasion and persistence in the face initially of almost uniform resistance) the Department's first strategic plan, published in 1992. Once completed, both the process and the product met with total approval. The annual strategic plan update has become the fundamental step in the annual budget process and is an essential guide for setting short and long-term goals and the strategies for reaching them.

The Department's first Management Study in 1995 -- a study to analyze operations -- led to changes in administrative organization, primarily by eliminating several management positions, merging two bureaus, and increasing the manager's span of responsibility. The new Water, Sewer, and Support Services Bureau resulted from the merger of Construction, Operations and Maintenance Bureau with Support Services. As a consequence, the Department saw improved performance, increased efficiency, and an annual saving of \$300,000.

During the span of the decade, the Department was able to participate in developing two citywide projects that will be of enormous benefit to the Department: the geographical information system (GIS) and the management information system (MIS). When completed, the former will provide on-line capability to instantly locate all water, sewer, and storm drain facilities. The MIS is a powerful, high-speed communication tool linking all the Department's computers and data networks. The MIS Master Plan, begun in 1993, was intended to help the Department use technology and computerization to improve its efficiency in all areas of operations.

The availability of computer programming technology was particularly welcome in the Finance and Administration Bureau. It enabled the Bureau, in 1992, for the first time, to produce automated reports for the Annual Budget and for the Capital Improvement Program. In 1993, staff had fully computerized the budget and financial planning system and developed a revenue forecasting computer model. The year also marked the shift to zero-based budgeting

for the FY1993-94 budget, which led to budget reductions and, in the first year alone, a savings of about \$3 million.

New Board members will find especially helpful the new, first-ever Policies and Procedures Handbook, which the Board published in 1999. It provides all Board members with guidelines on their roles and responsibilities as commissioners.

Employee safety has been a consistent priority for the Department and for many decades has been the subject of classes, training, incentive programs, and numerous other approaches. Despite a rocky road in the 1960s and 1970s, by the 1990s the staff exhibited a safety record second to none. In recognition of the Department's success and in recognition of the General Manager who strived to make it happen, the California/Nevada Section American Water Work's Association Executive Committee in 1989 established the section's Larry C. Larson Safety Award. The Committee announced it based the award on "the Long Beach Water Department's outstanding and unequalled safety record." The following year, October 30, 1990, the AWWA awarded its first Larry C. Larson Safety Award to the Long Beach Water Department "in recognition of over a decade of dedication and leadership in promoting, obtaining and preserving the highest possible safety standards." Conditions looked even better by 1993 when days lost due to accidents or injuries declined by 78 percent between 1991 and 1992.

It would have seemed the Department was riding on a crest relative to employee safety, but for Congress and the federal and state regulatory agencies there is always some higher standard to reach for. By 1992, more environmental regulations and workers' health and safety rules gave the Department reason to critically examine its safety policies and procedures. As a result, staff started work on a Safety Assessment and a Safety Master Plan that would assure the Department it was providing the safest working environment possible. The assessment and plan were completed in 1994.

As the city approached the year 2000, it had to face some serious economic truths. The Naval Station and the Naval Shipyard had closed and the jobs and economic base they represented went with them. Boeing, another major employer, was downsizing. To try to reverse the glum economic picture, the city's public policy was directed at increased retail and industrial development that would bring more jobs and sales tax revenue. And all new

development involves the Water Department to provide the mains, the sanitary sewer lines, and often new storm drain connections. The decade of the 1990s brought the Department perhaps its most extensive challenge in meeting the demands of an enormous surge in development. Among the more prominent projects were Queensway Bay Phase I and the new services required for the Aquarium of the Pacific, the new Towne Center at the former Naval Hospital site, the Marina Pacifica Mall, the Los Altos Mall, California State University Chancellor's building, the Gulfstream plant facility and hangar expansion at the Long Beach airport, the Boeing C-17 facility modifications, and of course the Department's own land leases to Kilroy Industries for its Airport Business Park and Airport Center that, at build out, will approach two million or more square feet of office space in a dozen or so buildings.

With a growing awareness of the necessity to keep local, state, and federal legislators informed about the effect their legislation can have on the Department's ability to serve its consumers, management initiated a more active legislative program. The 1998 issues, as an example, ranged from restoration of the Bay/Delta ecosystem to a \$5 million state grant to expand the Long Beach reclaimed water system, to assuring no loss of Department representation within the MWD. The State legislature created the MWD in 1928 and Long Beach, a member since 1931, is one of the original 13 that in 1998 had grown to 27 member agencies representing 14 cities, 12 municipal water districts, and one county water authority. As the second largest policy-setting entity in California after the state legislature itself, the MWD provides a vital collective voice for Southern California's water interests.

As ever, directing policy for the Water Department was a highly committed, well informed five member citizen Board. Replacing Ken Davis who had completed two terms was Michele Hansen, a former teacher and leader in the business community, appointed August 3, 1989. When Charles Jones completed his terms on the Board, Mayor Kell appointed Charles H. Parks, a retired Police Commander with the Long Beach Police Department, to fill the vacancy in August, 1993. Two years later, in 1995, Judith Rasmussen was appointed to the seat vacated by Leo Vander Lans. Commissioners Bennett Long, vice-president for community services for the Long Beach Community College District, and Helen Z. Hansen, a former high school principal and administrator in the Long Beach Unified School District, joined the Board in 1996. The Mayor, in July 1997, appointed Commissioner Helen Hansen as the city's

representative to the MWD Board of Directors. At the completion of Henry Meyer's terms, Stephen T. Conley, founder and chairman of Bancap Investment Group, was appointed to succeed him on June 17, 1997. To replace retiring Michele Hansen and filling out the Board as the last appointee of the 20th century, on June 22, 1999 the Mayor appointed Richard S. Williams, vice-president of United States Sea Launch, a commercial communications satellite launch company.

The Board and the Management have a bright, albeit challenging, future as they enter the 21st century committed to continue the Department's charge since it was established in 1911: To provide the residents and businesses of Long Beach with a secure supply of the finest water at the most reasonable cost with as efficiently run an organization as possible.

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