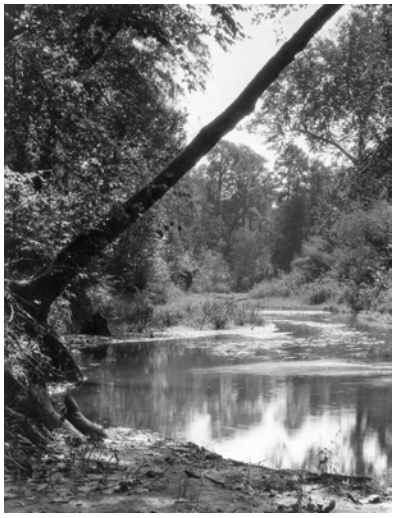
History of the City of Houston's Drinking Water Operations

By Susan Smyer
January, 2008

We call the attention of our readers to the advertisement of the town of Houston, by Messrs. A.C. & J.K. Allen . . . From all we can learn, the locatin [sic] they have selected possesses as many advantages as any other interior town in Texas, . . .
There is no place in Texas more healthy, having an abundance of excellent spring water, and enjoying the sea breeze in all its freshness. Nature appears to have designated this place for the future Government.
It is handsome and beautifully elevated, salubrious and well watered, . . .

Telegraph and Texas Register newspaper
Publishers: Gail and Thomas H. Borden
Columbia, Texas
August 30, 1836

In their 1836 newspaper advertisement, the Allen brothers painted a delightful and glowing portrait of the possibilities that awaited the first settlers perceptive enough to purchase lots in the infant town of Houston, Texas. Access to a plentiful supply of pure, potable water was a necessity for a thriving community and the Allen brothers boasted that this precious resource was readily abundant in their excellent location along the sparkling Buffalo Bayou. The story of water in Houston, which unfolded over the ensuing decades, proved to be more complicated than the Allen brothers' tantalizing advertisement would lead readers to believe.



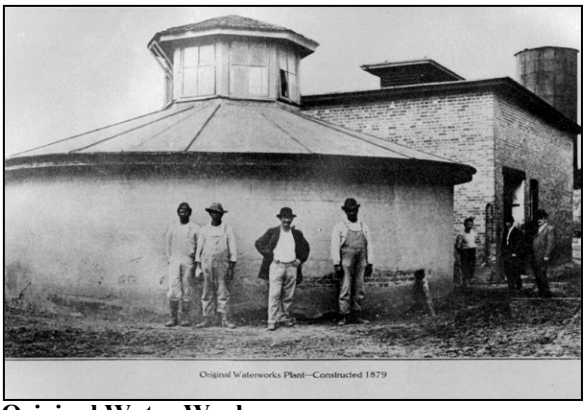
Historic Buffalo Bayou
Courtesy of Houston Metropolitan Research Center, Houston Public Library

As the town expanded, its residents relied on a multiple of varied water sources. "Pure, cold, and wholesome water," from Beauchamp Springs (located one and one-half miles outside the town limits, in the area now known as "The Heights") was delivered by wagon to Houstonians at a cost of seventy-five cents for each thirty gallon barrel. Many citizens used cisterns to capture rainwater for household use. Cisterns were still in use in some homes as late as the early 20th century and were sometimes less than ideal water storage units.

"Sometimes during the summer the cistern would go dry. When you turned on your faucet at the bottom of the cistern you got a pan full of wiggle tails," remembered a long time Houston resident of her girlhood.

Other residents drilled shallow wells or stored bayou water in barrels. The many bayous that surrounded Houston also supplied water for fire-fighting and manufacturing. Over time, it became obvious to Houstonians that these various methods of water supply and storage were inadequate for the growing population's needs.

After a devastating City Market fire in 1878 when fire fighters battled not only the fire, but a severe lack of water pressure, Houston's City Council sought to remedy the lack of a reliable water supply and pressure. They contracted, on a trial basis, with James M. Loweree and a group of associates of New York to build a water works facility which would pump water drawn directly from Buffalo Bayou. The twenty-five year contract provided that the Houston Water Works Company would provide the citizens of Houston fifty-five hydrants, a 150,000 gallon reservoir, 3,000,000 gallons of water a day, four miles of distribution mains and free water for three city fountains. The contract stipulated that Mr. Loweree's company would guarantee enough pressure to allow firefighters to throw six streams of water 100 feet high into the air. In addition, the contract included the limit of five cents per 100 gallons of water that could be charged to the company's customers.



Original Water Works.
Courtesy of City of Houston E.B. Cape Center.

The Houston Water Works Company completed a dam on the Buffalo Bayou above the Preston Street Bridge, laid water pipes and began pumping water to Houston inhabitants in September, 1879. The system was deemed successful when water pressure remained ample to combat a large fire on Main Street.

But in 1884, the New Yorkers sold the Water Works Company to a group of businessmen headed by former Mayor T.H. Scanlon. President Scanlon and the company invested in new pumps and boilers and improved pumping capacity to 8,000,000 gallons a day.

A series of devastating fires, again exacerbated by a lack of water pressure, occurred during the1880's, 1890's and into the early 1900's. After the Howard Oil Mills burned in 1886, President Scanlon is recorded as treating the investigators to "a liberal quantum of profanity, vituperation and personal epithets." Another blaze, starting in the Phoenix Lumber Mill, blackened twenty acres of Houston's Fifth Ward in 1891. Three years later, a massive conflagration leveled six blocks of central Houston. In that same year, a nun and a novice were killed in a $500,000 fire that swept through the block of Franklin-San Jacinto-Congress and Caroline. Houston suffered another catastrophe in 1901 when City Hall and Market and even the fire alarm switchboard fell victim to flames.

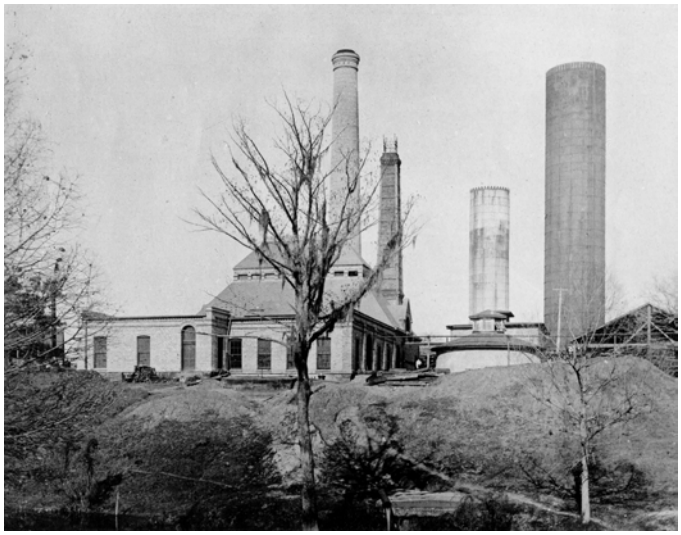
Mayor T. H. Scanlon
Courtesy of Houston Metropolitan Research Center, Houston Public Library

This loss of life and property clearly demonstrated the severe inadequacies of the Water Works operations and underscored its failure to supply uncontaminated, potable water and adequate water pressure to Houstonians. Many of the town's citizens were deeply concerned.

The *Houston Post* newspaper rallied to the company's defense in the following article, printed on September 19, 1886.

> *A great many people think that the water furnished by the water works is unfit for drinking or culinary purposes, but in that they are greatly mistaken. The supply is obtained from a portion of the bayou which is pregnant with springs, and the water is free from all impurities and is pure and wholesome to drink. Of course, after heavy rains the banks of the bayou wash into the stream and the water is then discolored slightly. But even then it is good and much better at all seasons than Mississippi river water, especially at St. Louis, where the river is muddy and dirty.*

A source of seemingly unlimited pure water only 180 ft. underneath Houston was discovered in 1887 when Henry Thompson drilled an artesian well. Thompson's discovery tapped into the nation's third largest underground reservoir of water. The Water Works Company soon drilled fourteen more wells to pump the fresh, unadulterated water from this reservoir for their customers' consumption.



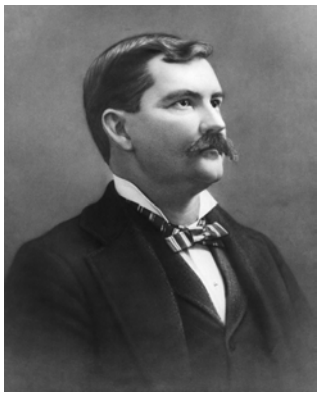
Houston Water Works Station
Courtesy of Houston Metropolitan Research Center, Houston Public Library

Even with an expansion of the well system, the Water Works was hard pressed to meet the water demands of a burgeoning population. By necessity (and openly acknowledged) in emergency situations, Buffalo Bayou water was pumped through the mains and mingled with the ground water to provide enough pressure to fight fires. During the 1890's, despite Water Works Company denials, suspicions grew that the increasingly polluted waters of Buffalo Bayou were secretly being used to supplement the artesian ground water for human consumption. Citizens complained about the quality of the tap water in their houses—some calling it "tar water." President Scanlon was met at home with grumbles about the water from his wife. He promised her that his company would drill more wells to ameliorate the situation.

The *Houston Daily Post* ran a series of investigative articles in the 1890's about the Water Works Company and the pollution in Buffalo Bayou. In a September 6, 1893 article, Houston Cotton Exchange officials charged that the bayou was "an immense cesspool, reeking with filth and emitting a stench of vilest character." The newspaper noted in 1895 that a dozen privies, a smallpox graveyard, a dead cow, oil mill, and cattle yards had been sighted in the waters above the Water Works' dam. In another article later that year, reporters wrote that cattle from the Southern Oil Mill stockyards were discovered wading in the bayou alongside decomposing cow carcasses. A drain from the mill ran directly into the bayou creating additional unsanitary conditions. "It is our opinion that the use of this water is a menace to the lives of the people of this community," avowed the investigative reporters.

Doubts about the city's quality of water and the suspicion that the Water Works Company was mingling the pure ground water with polluted bayou water in Houston's water pipes did not completely abate during the next decade. There were periodic signs of trouble such as the three-foot long dead eel that was found blocking a water pipe in the women's ward of the police station in 1903. The *Houston Daily Post* quoted the chief clerk as saying (with tongue firmly in cheek), "Now, that eel undoubtedly came from the artesian wells with which the water company is supplying the city."

Citizen misgivings and concerns were confirmed in a humorous, but telling incident that occurred in 1906. A young girl walking along a Houston street one day was startled to see fish jumping in the gushing water from a broken main. She captured some of the fish in a jar and took them to City Hall as evidence of problems with the water supply. Hidden investigators watched as Water Works employees repaired the broken main and removed catfish from the pipe. The *Houston Post* wryly reported, "Insomuch as catfish are not found in artesian water and in view of the fact that the company claims to be furnishing pure artesian water, the 'catch' is regarded rather remarkable."

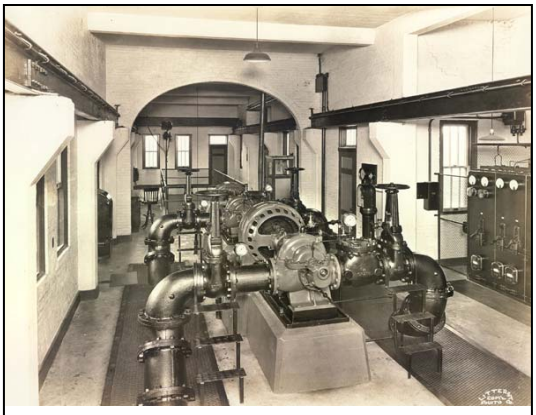


Mayor H. B. Rice
Courtesy of Houston Metropolitan Research Center, Houston Public Library

In order to help the city plan for the future and soon after the turn of the century, Houston Mayor H. Baldwin Rice and the City Council authorized a study of the operations of certain European cities. In his conclusion, the author of the study reported ". . . viewing Houston for the first time and observing that this city had nearly if not quite a hundred excellent churches, but had very few sewers, less than one-half the necessary water service that was needed for people than here. . . I gained the impression that while people of Houston were admirable equipped for living in Heaven, they were rather poorly equipped for living in Houston."

It was clear that something had to be done to provide that basic necessity—pure, potable water—to the citizens of Houston and it wasn't long before a major action would be taken to remedy what had become an untenable situation.

On October 6, 1906, the City of Houston bought the Water Works Company from President Scanlon and his business associates for $901,700—the amount of debt owed by the company. With the sale, the City acquired the Water Works plant, 55 wells and 65 miles of mains. The newly organized Water Department rapidly drilled sixty-six new artesian wells to augment the recently acquired infrastructure. Satisfaction in the efficient system and faith in the quality of Houston water had been restored. Mayor Rice proudly stated, "In my opinion the purchase of the water works was one of the best investments ever made by the city. The old company made no effort to keep up with the development of the city and as a result there were numerous complaints. Since the city took charge, extensions have been made in all parts of the city and an effort has been put forth by the officials to keep pace with the city's unusual development."



City of Houston Central Water Plant at 33 Artesian Street, circa 1936.
Courtesy of City of Houston E.B. Cape Center.

After restoring confidence in its system, the Water Department began an aggressive effort to meet the needs of a rapidly growing modern city. It quickly installed water meters and charged its customers for their water usage. The previous flat rate had encouraged wastage---wastage that diminished dramatically from 11,000,000 gallons in 1906 to 5,500,000 gallons pumped in 1914. During that period, the customer base increased by 65%. Three new pumping plants were constructed and the original plant (the Central Water Plant) on Buffalo Bayou was enlarged. A milestone was reached on July 20, 1925 when 20,000,000 gallons of water was pumped for the first time in one day!

City of Houston Water Well, 1945.
Courtesy of City of Houston E.B. Cape Center

In the second half of the 20th Century, new wells were drilled to supply water to the city's pump stations, but it was soon apparent that Houston leaders would need to develop long-range solutions, and identify additional water resources to meet the demands of an exploding, post World War II population. City officials responsible for water production had the foresight to obtain the rights to nearby surface water sources (lakes and rivers) to insure a plentiful and dependable supply for the future. Two federally funded World War II era canals that flow from the San Jacinto River to the Ship Channel were purchased in 1945 and in 1954, and a dam was constructed across the San Jacinto River to create Lake Houston.

Construction of the Lake Houston Dam, 1953-1954.
Courtesy of HoustonWaterWorks Museum + Education Center.

Houston's East Water Purification Plant began operation in 1954.
Courtesy of City of Houston WaterWorks Museum + Education Center.

With a reservoir of 160,000 acre-feet, Lake Houston is a dependable supply of raw water for the nearby metropolitan area. Houston's first water purification plant (the East Water Purification Plant) processes water from Lake Houston that travels to the plant via the twelve mile long West Canal. The City of Houston now holds a percentage of the water rights to Lake Livingston (constructed in 1969) and Lake Conroe (constructed in 1973). In 1990, the Southeast Water Purification Plant began pumping water and in 2005 the newest treatment plant, the Northeast Water Purification Plant, opened its valves. As the nation's fourth largest municipal water provider, Houston will eventually provide water not only to the city, but to several counties adjoining Harris County.

Houston has experienced serious land subsidence in the last few decades partially due to the withdrawals of millions of gallons of water that have been pumped from the ground underneath its soil. Sections of the city have sunk several feet. The artesian wells and the pure water that they provided seemed like the answer to the city's water problems in 1887, but by the 1970's were, themselves, the cause of another type of water problem. Under mandate from the state to end subsidence, in the future the city will pump less ground water and process more surface water for its customers' use. By 2030, Houston water pumpage cannot exceed 20 percent groundwater.

Northeast Water Purification Plant Storage Tanks, 2007.
Courtesy of City of Houston WaterWorks Museum + Education Center.

Initially the Water Department, with an elected official as its head, operated under the auspices of the mayor and city council. During its first hundred years, the responsibility of providing drinking water to Houston and surrounding areas has been renamed and moved in and out of the Public Works Department several times. Currently it is called Drinking Water Operations and operates as part of the Houston Public Utilities Division, Public Works and Engineering Department. Houston Drinking Water Operations currently produces and distributes more than 146 billion gallons of water each year through a 7,000-mile pipeline distribution system.

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