

AN EARLY HISTORY OF HONOLULU'S  
WATER SYSTEM

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# An Early History of Honolulu's Water System

BOARD OF WATER SUPPLY  
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## AN EARLY HISTORY OF HONOLULU'S WATER SYSTEM

By George F. Nellist

Honolulu's public water system is more than one hundred years old, one of the oldest, if not the oldest, under the American flag west of the Mississippi River.

The first unit, installed, paid for, and operated by the government, was in service on March 31, 1848. As a matter of fact, the system is a little older than is indicated by this date, perhaps several weeks or months older, for the exact date on which the first delivery of water was made is lost in the mists of unrecorded early history.

However, on March 31, 1848, in his annual report to King Kamehameha III and the Legislature of Hawaii, Keoni Ana (John Young), Minister of the Interior, made this notation:

"During the past year, a Harbor Master and Pilot's office has been erected, at Honolulu, on a piece of land belonging to the Government, near the wharves. A water tank, for the convenience of the shipping, is placed in the basement story of this building. The water is supplied, through a leaden pipe from the Reservoir on the North East side of the town. It is now in active operation, and, so far, promises to be profitable. The expense of this establishment was \$2,647."

The "shipping" referred to by the Interior Minister was predominantly provided by the New England whaling ships which made Honolulu harbor their winter headquarters. Supplying the whalers with their necessities had long before succeeded the sandalwood trade as the backbone of Honolulu's business life. Hawaii's sandalwood was practically all gone, exported to China, but whales flourished in the North Pacific and Arctic oceans, to the great financial advantage of the New England home ports of the whalers and to Honolulu, where they were outfitted and supplied winter after winter following their summer cruises in northern waters.

The first ships to visit Honolulu obtained their fresh water by sending small boats with casks up Nuuanu stream above the salt water tidal area. After 1822 and onward to 1848, when the "leaden pipe" was laid, they obtained water from privately owned shallow surface wells, excavated on the dusty, barren plain where was situated Honolulu, a small village clustered between the lower end of Nuuanu valley and the harbor. This was good hard money business for the well owners, but it was not satisfactory service for the sea captains.

As the commercial life of Honolulu early in the last century depended almost entirely on the whaling trade, it was obviously essential that the trade be well served. The necessity for furnishing the whalers with a dependable, convenient, and reasonable water supply was recognized and a movement to that end was initiated in 1838 by Ladd & Company, general traders.

Thrum's Annual for 1889 relates the story as follows:

"From copies of correspondence kindly placed at our disposal the following facts relative to the introduction of the first water pipe for this port have been collected:

"During the visit of Mr. P. A. Brimsmade of the firm of Ladd & Company of this place, to Boston, Massachusetts, in 1838, through a representation made by him that the King of these islands was desirous of bringing water in from a considerable distance for the purpose of supplying vessels at Honolulu, Messrs. Proctor and Felt were induced to consign to Ladd & Company fourteen reels of lead pipe weighing 8,248 lbs., of inch and half-inch size, per ship Fama, October 17, 1838. This venture, however, did not meet with the success anticipated, as in 1845 ten reels still remained on hand. An effort was made to effect

a sale and close out the consignment to Dr. Judd (Minister of Interior, March 30, 1845—March 4, 1846) for the government, but during the celebrated arbitration suit of Ladd & Company, the matter was suspended but renewed again in the summer of 1847, resulting in the disposal of it in September of that year for temporary use till iron piping could be obtained, and was laid to convey water from a taro patch back of the French Consul's (at that time 'on the mauka side of Beretania street between Fort and Emma streets') to the Harbor Master's office at the foot of Nuuanu street. This was the initial effort of the present well distributed water system of Honolulu, and was the first attempt to establish a public water supply."

Before the excavation of shallow surface wells, the first of which was dug in 1822, Honolulu had depended on surface streams and springs for its water, and it was water from these sources, collected in a small reservoir in the "Pelekane" taro patches, which supplied the first unit of Honolulu's water system.

"Pelekane" was located between the present Fort and Emma streets, on the mountain side of Beretania street, just beyond the present end of Bishop street.

From Thrum's information, that the government did not acquire the lead pipe until September, 1847, it is a reasonable assumption that the first unit of Honolulu's water system, designed to service the whaling ships, was completed early the following year. It is obviously with a margin of safety, based on the Interior Minister's report of 1848, that March 31, 1848, was designated as the centennial of Honolulu's water system and observed as such.

It is quite clear that it was a desire to serve and hold the trade of the whaling ships that caused Honolulu to initiate its water system. Furthermore, there was a threat of competition for this valuable trade from Upper California which was a part of Mexico until 1846.

Thomas O. Larkin, United States Consul and merchant of Monterey, published the following advertisement in the Polynesian early in 1845:

"Whale-ships supplied. . . Wells are being built near the beach, with pipes to conduct water to the boats. . . The climate is mild; vessels never carry away a sick crew."

Larkin's appeal for business, addressed directly to the captains of the scores of whaling ships then wintering in Hawaiian waters, certainly bestirred local residents to thought and action.

Honolulu was keenly aware of the need of developing sources of water supply. It was even suggested that water from Nuuanu valley be carried to the village on the backs of animals.

The Polynesian of July 5, 1845, said editorially:

"WATER FROM the VALLEY.—The water of most of the wells in town is very hard, being strongly impregnated with mineral matter. On that account it is unfit for washing, bad for cooking and more or less unwholesome for drinking. A number of families send daily to the country for a supply of soft water. In most of the towns on the Coast there are numerous water carriers, who bring to the inhabitants at a small charge a daily supply of the pure element. As we are all fast becoming teetotallers, it is quite indispensable that some arrangement should be made for furnishing the town with a wholesome supply in lieu of the bad water of the wells. Will not some enterprising teetotaller provide himself with water jars and a number of mules or jacks, which could readily be broken to carry the jars, and engage with families to furnish them a sufficient quantity every morning at a reasonable charge? An excellent spring exists within a mile of town."

The government of the Hawaiian kingdom was alert to the situation and fully recognized the vital importance of retaining the whalers' patronage. A report of the Minister of Interior dated August 1, 1846, said in part:

"It is well known that the whaling ships lay the foundation for nearly all our foreign commerce, and it is from them we receive our money. . . .

"Of all foreign vessels however that visit us, the whaling vessels are the most important, we should therefor endeavor to favor them and promote their interests."

Nor was there lacking an appreciation of what an adequate water supply would do for the beautification of the village.

"Few places are better situated to make a good display than this," commented the Polynesian of September 25, 1847. "The garden like appearance is greatly to its advantage, and it needs but the introduction of water from the valley on a larger scale to have numerous public fountains and to irrigate the trees and gardens to an extent, which in a few years would put an end to much of the dust and cause the town to rival the valley in verdure."

John Young's prophecy that the infant water system "promises to be profitable" was speedily fulfilled. Honolulu apparently was well pleased by the spectacle of water being transported for a considerable distance by pipe line, and the need for expansion was clearly recognized.

Still in office as Minister of the Interior, John Young's report dated March 31, 1850, said:

"Preparations have been made to conduct water through iron pipes to the harbor in Honolulu, the pipes have been ordered and are daily expected to arrive. This is also a work of importance and cannot fail to be of great advantage to the town."

Installation of this second important unit of Honolulu's budding water system was promptly undertaken. The iron pipes apparently arrived on schedule and on May 18, 1850, the Polynesian reported:

"Mr. W. Brandon, recently arrived from Boston, in the Charles, has been employed by the Minister of the Interior to superintend the construction of the reservoir, and laying down the iron pipes to convey the water from the 'King's Spring' in Nuuanu, to the water's edge in town. As Mr. B. has had two years' experience in Boston upon the extensive works recently completed to water that city, we have no doubt the work here will be done in a substantial and creditable manner."

That Mr. Brandon well merited the confidence expressed in his abilities is indicated by the fact that the reservoir and iron pipe were built and laid within four months after his arrival at Honolulu.

This historic event was reported by the Polynesian of Saturday, September 7, 1850, as follows:

"New Water-Pipes.—The water was 'put through' the newly laid pipes on Thursday last (September 5, 1850), and in a few days will be ready for shipping. We congratulate the shipping interests and the immediate residents in this city, who can be accommodated with a supply from this new and abundant source, and more earnestly hope immediate measures will be adopted for supplying the entire city with this essential element of health, cleanliness, and comfort. As a matter of public duty, we think the government should undertake it. As a matter of pecuniary revenue it would pay well. What objection can there be to it? Let us have it then, as soon as the pipes and other apparatus can be imported."

Official notice of the completion of the 1850 project was given by the Minister of the Interior in his report dated March 31, 1851, in which he said:

"The aqueduct mentioned in my report to the last Legislature is completed, and in successful operation, and proves to be a profitable investment."

Other contemporary reports show that the "aqueduct" was a four-inch iron main carrying water from a small masonry reservoir which had been constructed near the intersection of Nuuanu Avenue and Bates street, in the "Kahookane" district, to the harbor at the foot of Nuuanu. This installation, like the original one of 1848, was principally designed to serve the whaling ships, but it also supplied water to numerous residences in the adjoining areas. The source of supply, the "King's Spring," was located on the east side of Nuuanu stream, a little below Judd street and east of Nuuanu avenue.

Honolulu was prompt to take advantage of this new water system to provide its first facilities for protection of the village against fire. The Minister of Interior's report for the year ending March 31, 1852, noted: "Five hydrants have been placed in Nuuanu street, and reservoirs are in process of construction

at the intersections of Fort, Mauna Kea, Cross, Merchant, Hotel, and Beretania streets."

One of these "reservoirs," or rather cisterns, was uncovered by a construction crew at the intersection of Fort and Hotel streets in 1945, during World War II. Stoutly constructed of mortar and brick it was in an almost perfect state of preservation despite its more than ninety years of existence beneath a busy city street.

The fire prevention campaign apparently was carried on diligently, for in his report for the nine-month period ending December 31, 1852, T. Metcalf, Superintendent of the Bureau of Public Improvements, listed under expenditures: "Hydrants, Honolulu, appropriated \$5,423.40—expended \$5,403.45." And five thousand dollars, a hundred years ago, must have financed the purchase and installation of a considerable number of fire hydrants.

Several of these fire hydrants, installed in 1851-52, have been located and recovered by the Board of Water Supply. Made of high quality bronze, they are in a perfect state of preservation, still usable and, when cleaned and polished, look like they had just come from the factory they really left almost a century ago.

Honolulu was growing, the harbor-side village was becoming a small city, and by 1854, with a population of 11,455, it was quite clear that a larger water supply would soon be required. In that year William Webster, civil engineer, submitted plans for a new water system, designed to furnish the town with a daily consumption of about 55 gallons per capita.

Webster's plans provided for the construction of a new and larger reservoir, 80 by 100 feet, ten feet deep, lined with brick, to be supplied through pipes from various springs in Nuuanu valley, and the 4-inch main of 1850 to the waterfront to be replaced by a 12-inch main, the old 4-inch pipes to be torn up and used for distributing mains.

It was not until 1860-61, however, that the Webster system went into operation. The new brick reservoir was also located at "Kahookane," below Judd street and between Nuuanu Avenue and Nuuanu stream. It was supplied by water piped from Nuuanu springs and Kapena Falls and so sound was the construction called for by Webster's plans that the reservoir continued in active service until 1895.

Completion of the Webster system brought the first action by the Board of Health to prevent contamination of Nuuanu's surface water. Honolulu's population had grown to 14,310 in 1860 and the city enjoyed the benefits of its then modern water system.

Reference has been made to Honolulu's early-day supply of water from shallow surface wells. We have the written record of an eye witness to the excavation of the first well, which raises an interesting question. How long have the Hawaiian islands been inhabited by humans? Most historians agree that the Polynesians came to Hawaii about one thousand years ago, but this record suggests that the islands might have been populated many thousands of years earlier.

Here is the record, written by James Hunnewell, early American trader, in 1868:

"The first attempt to dig a well in Honolulu was made by William R. Warren, an American, about the year 1820, in the central part of the village, as it then was, and in nearly the highest part. He went down through the yellow loam and volcanic sand some eight or nine feet to the great bed of coral that underlies the whole town. The loam caved in, making a frightfully large hole. The superstitions of the natives were aroused by some foreigners who were hostile to anything American, and the fearful hole had to be abandoned.

"The first successful attempt to dig a well was made some two years later (1822), by Joseph Navano, a New Yorker, in his yard, afterwards owned by Stephen Reynolds, not far from the Bethel, if my reckoning is correct (and not far from my old Sandal-wood Storehouse, not a vestige of which has been seen for upwards of forty years), some three or four hundred feet from the store. He went down about eighteen feet; eight or ten feet through loam and

Navano?

volcanic sand, and some eight feet through the coral bed, the upper surface of which was very uneven. The bottom of the coral bed was as uneven as the top, and the whole was full of cavities and channels through which the fresh water ran towards the shore.

"Through the coral the well was hewn with an ordinary American wood-axe. Near the middle of the bed, a hard projecting lump was found, which required several blows of the axe to part it from the surrounding mass, and in falling, it drew with it what at first seemed to be a knot several inches long, but on examination, proved to be a bone of the size and shape of a human thigh bone. I, with others, handled it, and at the time was of the opinion that it was a human bone, and this opinion was strengthened by the fact that from one of the cavities above mentioned in the coral bed, the skull of a human being was taken, in good order and preservation, but darker than a new skull. It evidently had some strength in it, as it was kicked about by boys.

"The cavities did not communicate with the surface. Neither myself, or any who saw these remains, were naturalists, and the opportunity of describing and preserving these most interesting fossils was neglected.

"The second well was dug in 1822, I think on a part of the Holmes premises, occupied by Captain William H. Davis, nearly opposite the main entrance of the estate now (1868) owned by Charles Brewer, Esq., and I think near the northern line of the present Fort Street. The ground here is a very little higher than where the Navano well was located, and this second well was three or four hundred yards from the first, in a northwesterly direction. The substrata proved to be the same as in the former case, and the coral was full of cavities, from which were taken a number of small bones, which I, with several others, examined and considered bones of a man's hand or foot.

"From the facts related and on reflection, I am led to the conclusion that the Islands were inhabited by man, before and during the formation of that vast body of coral that underlies Honolulu.

"Many of the present wells, especially those on the plain east of Honolulu, towards Waikiki, pass through the coral bed, which is full of cavities and cracks and is permeated with streams of fresh water from the mountains. They are usually sunk nearly to the sea-level. In one well on this plain a strong current sets constantly from the mountains to the sea."

The water taken from the surface wells apparently was potable but not palatable. It was something one had to get used to. One commentator remarked: "Those who confined themselves wholly to the use of the water from surface wells became accustomed to it, and only realized its inferior quality when visitors remarked on its peculiar taste."

Construction and operation of the water system planned by William Webster, with subsequent extensions of mains and distribution lines (a map dated 1878 shows the length of the pipe lines to have been about seven miles), represented the last major single development in Honolulu's water service until the development of artesian water in 1879 and 1880.