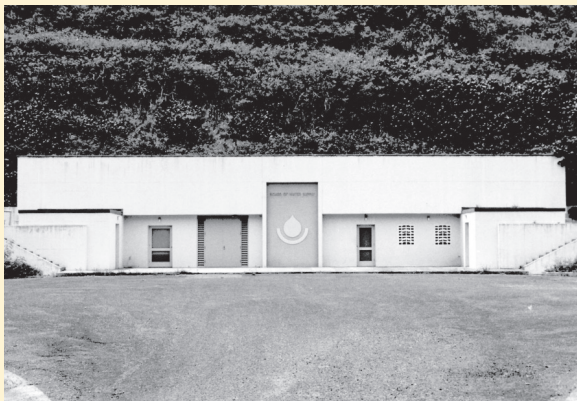




Miners bailing out water that seeped into Hālawā Shaft. The Board of Water Supply's first Manager and Chief Engineer, Fred Ohrt, is at right. September 11, 1942.



Water had to be pumped out to keep water levels low enough to work. It is estimated that 20 million gallons per day was pumped during construction in the 1940s, enough to fill 30 Olympic-sized swimming pools.



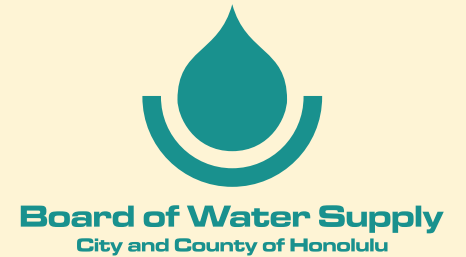
Hālawā Shaft and Underground Pumping Station in the 1950s.

# Hālawā Shaft


and Underground Pumping Station





November 2022



**Contact Us:**

 [boardofwatersupply.com](http://boardofwatersupply.com)

 (808) 748-5041

 [contactus@HBWS.org](mailto:contactus@HBWS.org)

**Follow Us:**

 [Facebook.com/BWSHonolulu](https://www.facebook.com/BWSHonolulu)

 [@BWSHonolulu](https://twitter.com/BWSHonolulu)

*Safe, dependable, and affordable water now  
and into the future*



## OVERVIEW

Nestled in the Hālawā Valley is one of Oʻahu's most vital water sources, the Hālawā Shaft. It is among the largest of the Board's 90+ underground water sources and one of four main water supply shafts. The Hālawā Underground Pumping Station pushes water up the shaft from the aquifer below. Since 1944, when this system was put into use, the Board of Water Supply has provided water from this high-quality water source to southern Oʻahu, helping it become the thriving area it is today.

## History

The Board of Water Supply was formed in 1929 to manage competing needs for water on Oʻahu. In the following years, it became apparent that more water sources were needed to supply a tremendous growth in population and get through a prolonged drought. By the late 1930s, a war reaching across Europe and Asia threatened to cross the Pacific Ocean. If it did, it would bring



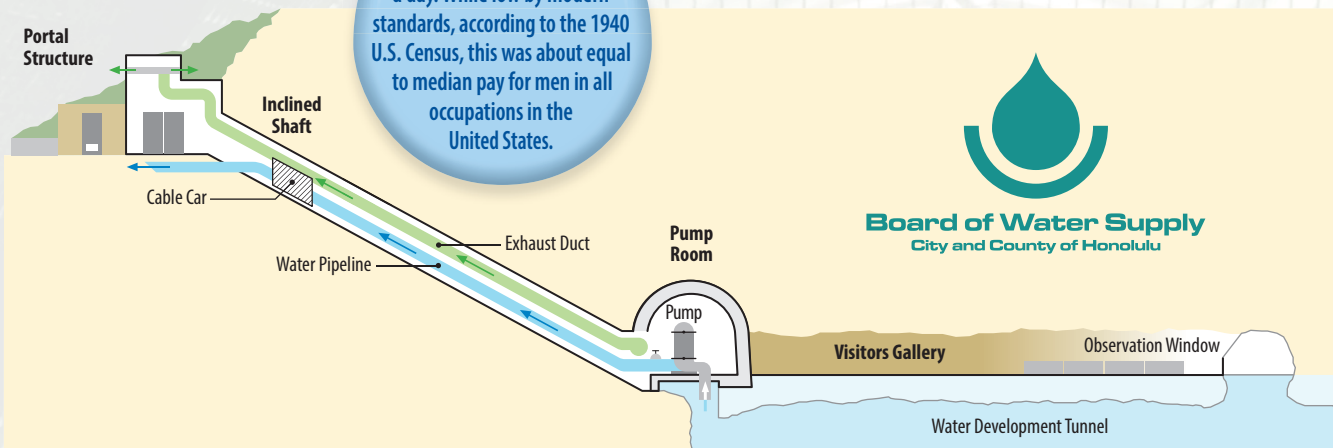
Construction workers excavated the 10-foot high tunnel while waist-deep in water.

Construction workers earned \$4.00 a day. While low by modern standards, according to the 1940 U.S. Census, this was about equal to median pay for men in all occupations in the United States.

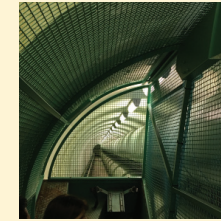
large numbers of people to Oʻahu to assist with the war effort, increasing the burden on already-strained water supplies. In 1940, the resulting sense of urgency prompted Water Manager Frederick Ohrt to order design of the North Hālawā Underground Water Development Project, which later came to be known as the Hālawā Shaft. Construction of the Hālawā Shaft began on December 6, 1941. Contractor James W. Glover was hired to build the tunnel, with workers digging 24 hours a day, 7 days a week.

Early on Sunday, December 7th, workers gathered to begin their morning shift. Hearing a sudden sound, they looked up to see approaching airplanes and witnessed the beginning of the attack on Pearl Harbor. World War II had come to Hawai'i, drawing the United States into the conflict. Work on Hālawā Shaft was immediately halted, with workers, equipment, and materials diverted to the war effort.

Construction later resumed under difficult working conditions. Because the workers were tunneling through water-bearing rock underground, water filled the tunnel. Water had to be pumped out to allow workers to continue the hazardous work of excavation while waist-deep in water. In the event of flooding, escape routes were plotted through tunnels. A temporary pipe brought air down to workers. The Hālawā Shaft and Underground Pumping Station took 3 years to build and were completed on December 1, 1944 at a cost of \$2,295,000 (\$36,066,577 in today's dollars).



## Going Down the Shaft



Visitors ride down the shaft in a cable car, past one pipeline for exhaust and one for water.

Visitors' first view of the facility is the building at ground level. They then descend by cable car travelling at a 30 degree angle through the brightly-lit 284-foot long shaft. Running the length of the inclined shaft are two large pipelines. While fresh air is circulated down through the shaft, the top pipeline carries exhaust

and the bottom pipeline carries water up and out of the shaft.

Visitors exit the cable car just 23 feet above sea level into the bright and clean pump room equipped with three pumping units. Two of the units have a capacity of 4,200 gallons per minute each, and the third can pump 7,000 gallons per minute.

If all three pumps were operated at full capacity, they could produce 22 million gallons of water per day – enough to fill 33 Olympic-sized swimming pools!

## A Different World

A doorway leads visitors from the pump room to the Hālawā tunnel, a large cavern carved by hand out of solid rock. It once served as an emergency escape passage for the men who built the tunnel. Today it leads workers and visitors along a 300-foot, specially-lit path to a viewing area.

Visitors can look down into a silent, crystal-clear pool of water. This is the only visible portion of the massive water source. The pool is at the top of a 919-foot-long water development tunnel, which extends below and back to the pump room.

Water is skimmed from the water surface to avoid drawing salt water, which can intrude into deep water sources when fresh water is drawn up at a high rate. While the water surface appears motionless, the water usually flows into the pump station at a rate of 10,000 gallons per minute. A measuring stick indicates water levels at various times over the decades this source has been in use.

## Current Operations

Hālawā Shaft supplies 20% of the water to Metropolitan Honolulu – Moanalua Valley to Hawaii Kai including Waikiki. On average, 10 to 12 million gallons per day is pumped to serve about 450,000 people (residents and visitors).