Ka Wai Ola - Water For Life

WATER IS ESSENTIAL FOR LIFE. The BWS is committed to providing the people of O'ahu with safe, dependable and affordable water now and into the future. To ensure we continue to do so efficiently and effectively, one of the BWS's key initiatives is a Water Master Plan. A Water Master Plan is a comprehensive program that looks ahead 30 years, evaluates the entire water system, identifies necessary improvements, and balances needs and costs of providing water to our residents and visitors.

O'AHU'S WATER SYSTEM IS MASSIVE. EACH AND EVERY DAY, the BWS pumps an average of 145 million gallons of water and maintains infrastructure including 2,100 miles of pipes, 90 booster pump stations, 94 water sources (wells, tunnels and shafts) and 171 water storage reservoirs.

UNDERGROUND OR OTHERWISE OUT OF SIGHT for the most part, this water infrastructure is subjected to ongoing wear from the island's volcanic soils, earth movement, ground settling, weather, natural corrosion and the flow of water through it. Water main breaks are perhaps the most prominent signs of wear, but there is much more going on that is not evident day-to-day.

THE BWS IS INVESTING IN IMPROVEMENTS to protect and maintain the water system. These investments of the people's money are helping us continue to capture, treat, store, move and sustain water for all of us on O'ahu, now and for future generations.

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

Board of Water Supply
City and County of Honolulu

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About Water Main Breaks

WATER FOR LIFE
KA WAI OLA

What is the BWS Doing to Prevent Main Breaks?

The Honolulu Board of Water Supply (the BWS) is taking proactive steps to reduce the number of breaks and resulting water losses from breaks, including:

- Replacing portions of the water system infrastructure that are most vulnerable to breaks and most critical to the service dependability. The BWS plans to spend $80 million annually to repair or replace aging or vulnerable water infrastructure.
- Taking protective measures to extend the life of water mains in areas of highest corrosion potential.
- Conducting forensic analyses to determine the primary causes of main breaks and identify changes to design, construction and operation to reduce future breaks.
- Strengthening our efforts to minimize water loss within the water system. The BWS's field crews are using cutting-edge technology to proactively pinpoint leaks and other locations for repair.
- Enlisting your help to conserve water, which results in less water being pumped through the system. This means less stress on pipelines, joints and other components of the system. The people of O'ahu are doing an impressive job in reducing the use of water, which helps reduce main breaks.
- Monitoring system pressures and adjusting operations to increase efficiency. If we pump less, we use less energy, reduce wear-and-tear on the system, have fewer main breaks, and save money.
- Developing a 30-year Water Master Plan to identify and prioritize long-term improvements.

The BWS takes our role as stewards of O'ahu's precious water supply and the money paid by our customers seriously. We are working to reduce the disruption and cost of water main breaks by applying state-of-the-art methods to make more accurate, timely and efficient decisions about repair and restoration of the water system. Our commitment is strong to sustain BWS's heritage of supplying safe, dependable and affordable water, now and into the future.

Since 2011, the BWS has averaged less than 15 main breaks per 100 miles of pipeline. This is far fewer than the American Water Works Association's recommended maximum of 25 to 30 breaks per 100 miles of pipeline. In fact, the BWS has seen an overall decrease since the 1990s; we remain committed to continuing this positive trend.

The Underground Truth

Water main breaks are an unfortunate but unavoidable occurrence in water systems. The BWS works diligently to reduce the number of breaks on O'ahu. With 2,100 miles of pipeline across the island, this is a large undertaking.

Water is the most infrastructure-intensive utility there is – more than power or gas – because water requires pumping, treatment, storage and transport through pipes over long distances. With the passage of time, investment in this infrastructure has not kept pace with needs.

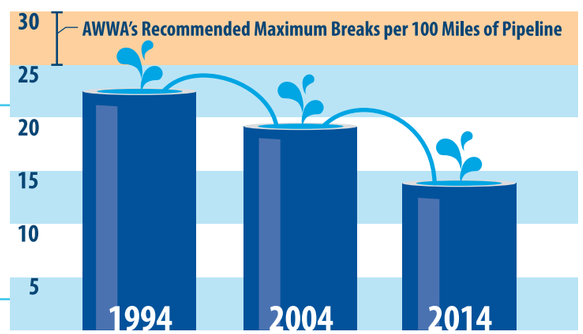
Water utilities all over are paying attention to their infrastructure now more than ever because it is reaching or passing its useful life. Just as you need to maintain, repair and periodically replace your roof so it continues to protect you from the rain, the BWS needs to do the same for the island's water facilities.

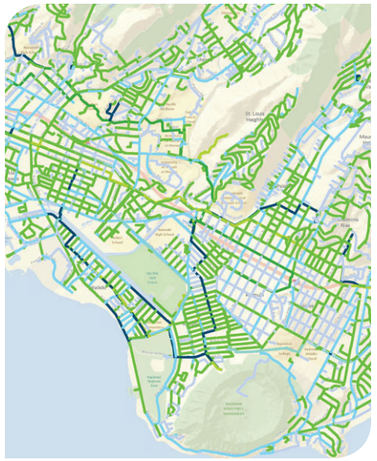
Why Do Breaks Occur?

Like all built objects, water pipelines wear out over time. Water running through pipes causes wear and tear. Volcanic soil, like that found on O'ahu, can lead to corrosion which breaks down the pipe material. Even the smallest crack or hole, if unnoticed and unattended, can eventually become a main break.

The BWS collects information on main breaks to help determine the cause of failure. This information is used to identify what we might do to reduce breaks in the future, for example by changing pipe materials, design specifications, construction methods, or other protective measures. Unfortunately, because of the sudden release of water when a break occurs, much of the evidence is often destroyed, so this is a very complicated task.

The BWS is conducting a system-wide pipeline Condition Assessment to collect and analyze data; the results of this analysis will be used to target the most critical locations for pipeline maintenance, repair or replacement. This way, we can proactively make improvements without having to wait for a break to occur and alert us to a problem.





By using sophisticated computer models, the BWS can predict where pipeline breaks are likely and target their resources to prevention

What Happens When a Main Break Occurs?

The BWS recognizes the inconvenience a main break can cause for a community and always tries to expedite repairs. However, repairing breaks is a complex process that requires many steps and considerable care.

The BWS's top priority during a main break is to protect public health and safety. After ensuring that any immediate health and safety issues are addressed, our next priority is to stop water loss and return service to the affected customers as quickly as possible.

Stop Water Loss

When a water main break is reported, the BWS immediately dispatches a troubleshooter to the scene to investigate. If the break is in a BWS pipeline, the troubleshooter locates and closes nearby valves to protect health and safety and stop water loss. (Breaks also can occur in lateral lines to individual properties, which are not owned by the BWS.) Closing the valves isolates the broken main from the rest of the water system, to allow repair while limiting the service disruption.

To protect the rest of the system from abrupt changes in pressure or flow, we have to be careful about selecting the valves to close and exercise caution in how quickly we shut them down.

Flooding can make locating and accessing valves difficult

Notify Affected Customers and Other Agencies

Once the valves are shut off, the BWS notifies other utilities with buried infrastructure in the area that we will be digging into the street. We then dispatch a repair crew to the main break location so they can begin restoring service as quickly as possible. If there are other utility lines in the area, the crew must wait for those utility companies to mark their lines so they are not damaged by excavation work.

The BWS also coordinates with the police department for traffic control, notifies customers in the area if there is a service outage, and communicates with other affected parties. If customers are without water, the BWS will provide a water wagon or connect to a nearby fire hydrant to provide drinking water during the outage.

To report water main breaks day or night

call (808) 748-5000

Repair the Broken Main

Once the flow of water is stopped, the BWS crew sets up safety equipment and clears debris so equipment, tools and supplies needed for repair can be brought to the break site. The crew uses equipment like backhoes to expose the broken water main and pumps to remove excess water flooded around it. Most of the BWS's pipes are buried 3 to 10 feet below ground. As they dig, the crews must take care to keep clear of the other underground utilities in the area.

The BWS's crews must remove water from a trench during excavation

The BWS crews then repair the broken main, which often requires replacing a segment of pipe. This can be a delicate and time consuming task.

Return the Main to Service

Once the repair is made, the crew tests the line and disinfects it to protect public health and water quality.

Next, a nearby hydrant is opened to flush air and debris from the pipe. The shut valves are then opened so water again will flow through the water main.

Repair the Pavement

Finally, the repair crew fills the trench and prepares the road for patching. Workers use a temporary patch to cover the excavation until a pavement contractor can make a permanent repair.