BOARD OF WATER SUPPLY

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POWERS, DUTIES AND FUNCTIONS

The Board of Water Supply (BWS) manages Oahu's municipal water resources and distribution system, providing residents with a safe and dependable drinking water supply. The BWS's 500-plus employees fully understand and embrace their crucial roles as stewards of Oahu's most precious resource and work together to accomplish its mission of "Water for Life." This includes repairing and replacing aging infrastructure, and maintaining and updating components critical to delivering water.

The BWS is the largest municipal water utility in the State, serving approximately 150 million gallons of water a day to roughly one million customers on Oahu. To keep the water flowing, the BWS must carefully and proactively manage and invest in its intricate system, consisting of 94 active potable water sources, 170 reservoirs, and nearly 2,100 miles of pipeline servicing nearly every community on Oahu.

The BWS is a financially self-sufficient, semi-autonomous agency of the City and County of Honolulu. Its operations and projects are financed with revenues generated by water transmission and distribution fees. The BWS also pursues federal and state grants to help subsidize BWS projects.

A seven-member board presides over and determines BWS policies. Five members are appointed by the Mayor and confirmed by the Honolulu City Council. The remaining two serve in their capacities as the Director of the State Department of Transportation, and the Director and Chief Engineer of the City Department of Facility Maintenance.

The Board appoints the BWS Manager and Chief Engineer to administer the Department. The Manager appoints the Deputy Manager and Chief Engineer. Together, they provide leadership and direction for the organization while supervising the Department's day-to-day business activities.

MISSION

The Board of Water Supply's mission of Water for Life is to provide a safe and dependable water supply, now and into the future.

Three main strategic objectives emanate from this mission: resource, economic, and organizational sustainability.

ORGANIZATION

Currently, the Department consists of 14 offices and divisions that work together to implement the BWS's mission by effectively managing Oahu's water resources and distribution system. It includes:

- Business Development Division - manages the Department's water business programs and compliance with all federal and state drinking water and applicable environmental rules and regulations. The Division also manages the Department's emergency response and disaster preparedness program.
- Capital Projects Division - implements the Department's Capital Program, including the design and construction of new source, storage, treatment, transmission and distribution facilities, and the repair, maintenance, and upgrade of aging water mains and facilities.
- Communications Office - provides comprehensive strategic communication services and support to the Department, including internal communication with employees and the Board; external communication with key stakeholder groups such as customers, community/advocacy groups, neighborhood boards, business/community leaders, media, and elected officials.
- Customer Care Division – interfaces primarily with BWS customers to provide services in the areas of bill payments, delinquent bills, account inquiries, water service investigations, review of building permits, new water services, and investigation of water leaks and possible causes for high water bills.
- Field Operations Division – maintains and repairs Oahu's water delivery system, which includes all pipelines, valves, and fire hydrants. This division also maintains the BWS's corporation yards and conducts landscaping work at all of its facilities.

- Finance Division - ensures the BWS's financial resources are efficiently and effectively managed by providing support for all of the BWS's financial and fiscal functions, including meter reading, general accounting, payroll, accounts payable, planning, and analysis, inventory, fixed assets, treasury, and purchasing.
- Human Resources Office - administers and manages the human resources programs, including training and development, labor relations, classification, recruitment, and examination, transactions, benefits administration, and contract negotiations.
- Information Technology Division - plans, designs, implements, maintains, and supports BWS information technology (IT) and geographic information systems (GIS) applications and the BWS IT infrastructure, which includes physical and virtual data centers, servers, personal computers, mobile computing, wired and wireless network communications, telephone systems, the call center system, and video surveillance systems.
- Land Division - acquires land and land interests for the BWS through purchase, condemnation, lease, easement, and executive land order; disposes surplus real property; and manages land that is under the control of the BWS.
- Legal Counsel Office - provides legal counsel and advice to the BWS and its officers and employees; ensures compliance with federal, state and local laws; assists the BWS in implementing industry best practices; and works to limit the department's exposure to liabilities.
- Office of the Manager and Chief Engineer - administers the affairs of the Department in accordance with policies and regulations adopted by the Board and the provisions of the City Charter.
- Security Office - develops, reviews, and implements plans, policies, and initiatives to improve the security for the BWS employees, water resources, and distribution system; and provides a prompt and coordinated response, together with other city, state, and federal agencies to appropriately respond to emergencies.
- Water Resources Division - directs the BWS long-range water resource and capital planning for the island's water system, and ensures that there is an adequate water supply for current and future customers.
- Water System Operations Division - monitors, maintains, repairs, and operates theDdepartment's diverse water systems, including well and booster stations, control valves, and the various water treatment facilities; and inventories, maintains, and repairs the Department's fleet of motor vehicles, construction equipment, and trailers.

HIGHLIGHTS

The BWS's 510 employees met the challenges of furloughs by continuing to show their commitment to providing safe and dependable water service to its customers. Employees pulled together to accomplish what was needed to advance the following BWS strategic objectives:

RESOURCE SUSTAINABILITY

This strategic objective ensures that natural groundwater supplies are protected and managed efficiently. The BWS plans for diversified strategies and projects in conservation, potable groundwater, and alternative water supplies, including brackish, recycled, and desalinated water to meet future demands. Efforts also focus on protecting the natural environment, important watersheds, and water sources by monitoring Oahu's rainfall and aquifer water levels and salinity, and taking appropriate precautions to ensure the sustainability of the island's potable water supplies.

The BWS's comprehensive water conservation program continues to foster effective water management policies and practices that reduce per capita use of potable water to encourage sustainable behaviors to all users on Oahu. Resource and demand-side management, alternative water supplies, water system optimization, consumer education, and collaboration with other utilities on industry best practices combine to form a holistic approach to this growing and expanding program.

- BWS investigators responded to numerous customer calls of water seepage on public property, pinpointing underground water leaks for repair.
- The BWS Leak Detection Team surveys approximately 50 miles of pipelines per month to find leaks in the distribution system using a combination of digital correlating loggers to record pipe vibrations as water pushes through the pipes and toning equipment to pinpoint the location of the leak. The data collected is used to prioritize and schedule planned repairs to the water system, which results in the prevention of potential emergency main breaks. Leak detection efforts have resulted in an estimated savings of approximately 1.4 million gallons of water per day (mgd), or about 506 million gallons per year. Water loss in the distribution system is currently 12.5 percent of the total water production. The BWS's goal is to reduce water loss to 10 percent.
- Recycled water is an important conservation strategy to reduce potable water consumption to extend our high quality water supplies for future generations. The

Leak Detection Program. The BWS Leak Detection Team proactively looks for and identifies leaks in the BWS system. The data collected is used to schedule planned repairs to the water system.

Department continues to support the use of recycled water in the Ewa area as an appropriate and more efficient source of water for irrigation and industrial purposes.

- Recycled water use from the Honouliuli Water Recycling Facility continues to provide alternative water supply in Ewa for irrigation and industrial purposes. Recycled water production averaged 8.6 mgd in Fiscal Year 2012, which was an average of one mgd more than the previous fiscal year because of the difference in average rainfall. The State Department of Hawaiian Home Lands' administrative complex along Kapolei Parkway, the City of Kapolei, and two parks are planned to begin using R-1 recycled water and H-Power's third boiler will begin using reverse osmosis demineralized recycled water in the coming fiscal year.
- The Koolaupoko Watershed Management Plans (WMP) is expected to be adopted in August 2012, and the North Shore and Ewa WMPs have been initiated. The Central Oahu WMP was initiated in FY 12. The Waianae and Koolauloa WMP's were adopted in 2011. These plans are the regional component of long-range strategic water plans for the City that is concurrent with the City's development and sustainable communities plan for Oahu. WMPs provide the strategic planning framework for watershed protection projects and water use and development for the BWS's long-range capital program, ensuring that adequate water supplies and water system infrastructure will meet Oahu's future water demands.
- The BWS implemented an array of activities that supported and reinforced efforts to educate customers regarding the importance of conserving water throughout the year and about other BWS programs.
- Through the BWS Water Conservation Week contests, Oahu students can learn about the importance of water and water conservation. The poster contest component is open to students in grades K-6 and the poetry contest component is open to students in grades 7-12. The winning posters and poems will be featured in the BWS 2013 Water Conservation Calendar, which will be available to the public at the end of 2012. The BWS formed public-private partnerships with sponsors in the community in order to offset calendar printing costs.

Water Conservation Education. (Back row l-r) BWS Board member Adam Wong, Mayor Peter Carlisle and BWS Manager and Chief Engineer Ernest Lau posed with some of the winners from the 2012 water conservation week poster and poetry contest. Thousands of students learned about the importance of water conservation through these contests.

  - For the first time ever, the BWS coordinated its successful "Detect-A-Leak Week" (March 11-17, 2012) with the state Commission on Water Resource Management and partnered with all county water departments, along with the Hawaii Rural Water to encourage all Hawaii residents to check for water leaks at their homes, properties and workplaces. The multi-agency coordinated program educated residents across the state of Hawaii on how to check for property leaks and encouraged them to fix it to prevent water loss.
  - In an effort to be more water efficient and to save on water and sewer bills, hundreds of Oahu residents gathered at the BWS Halawa Xeriscape Garden Open House and Unthirsty Plant Sale to learn how to conserve water through efficient landscaping, otherwise known as "xeriscaping." The Friends of Halawa Xeriscape Garden and about a dozen local nurseries offered a variety of drought-tolerant, less-thirsty plants for sale to the public. Proceeds from the plant sale supported educational programs and classes at the Halawa Xeriscape Garden. Visitors were also treated to free educational workshops and classes on xeriscaping, aquaponics, and rain barrel catchment systems, just to name a few. Other activities included keiki games, keiki garden planting, a scavenger hunt in the three-acre demonstration garden, and a free mulch giveaway.

- During the summer months, television and radio public service announcements encouraged consumers to use the water they need, but not to waste it. The water conservation media campaign helped customers understand the importance of sustaining Oahu's groundwater resources and provided easy tips for residents to reduce daily personal water use.
- Other public education programs, such as the recently launched BWS social media program, year-round facility tours program, various outdoor water conservation classes offered throughout the year at the Halawa Xeriscape Garden, numerous school presentations, and event educational booths also helped teach thousands of Oahu's youth and the general public about the island's finite water supply. More information about the BWS's educational programs can be found at www.boardofwatersupply.com.
- Through the support of the City's Department of Emergency Management (DEM), the BWS began utilizing Nixle as a communications tool to disseminate notifications and updates on major water related emergencies to the public via text message or email.

Water Conservation Workshops. Numerous classes that feature xeriscape plants and gardening techniques such as aquaponics, rain barrel catchment, composting, and container gardening are offered to the public to provide techniques to help them conserve water outdoors.

- The BWS understands its responsibility to protect and preserve the quantity as well as the quality of Oahu's drinking water supplies through compliance with all federal and state safe drinking water regulations. This includes the installation of new and replacement water treatment facilities. BWS chemists, microbiologists, and laboratory technicians understand the importance of their roles in providing safe drinking water to Oahu's residents. Each year thousands of water quality tests are conducted using state-of-the-art techniques and procedures.
  - In FY 12, the BWS conducted 22,768 water quality tests on samples collected from its water sources, distribution system, and treatment facilities to ensure all water served is safe to drink.
  - In June 2012, BWS completed its annual production and delivery of the Consumer Confidence Report (CCR), also known as the Water Quality Report, to all BWS customers. The report provides information on the quality of the water delivered from the BWS system and was mailed to all customers on record. The report is also available on the BWS website at www.boardofwatersupply.com. The Department also placed advertisements in Honolulu newspapers, including various ethnic language publications, to inform community members of the distribution.

ECONOMIC SUSTAINABILITY

The second strategic objective calls for a sound financial strategy to support theDdepartment's operating and capital needs. While operation and construction costs steadily increase, the BWS continued to focus its efforts on improving its core servics, by addressing aging infrastructure and ensuring the reliability and quality of water provided to all customers on Oahu.

- The BWS initiated a syste- wide energy audit contract to evaluate all water system facilities, buildings, and the automotive fleet and recommend energy efficiency improvements over the next 20 years using the Energy Saving Performance Contracting method.
- The BWS Board of Directors approved a revised rate schedule to fund the operation, maintenance, and replacement of Oahu's aging water infrastructure. The water rate increase will be spread over a five-year schedule, at 9.65 percent each year to minimize impact to customers. The first year of the revised rate schedule took effect on January 1, 2012 with the following four increases to take effect on July, for the next four fiscal years.

- The BWS completed an $85.2 million bond issue on its Water Revenue Refunding Bonds, which will result in an expected net savings of approximately $7.15 million over the life of the bonds. By taking advantage of low interest rates and the BWS's high credit ratings, this bond refinance is a financial move that will yield a cost savings of approximately $430,000 a year. The bond refinancing was part of the BWS's ongoing efforts to minimize costs and ensure fiscal stability to Oahu water ratepayers.
- Moody's Investors Service and Fitch Ratings, which establish bond ratings used when municipalities borrow money, affirmed the BWS's bond rating at Aa2 and AA+, respectively, maintaining a "stable outlook" in both cases. The bond ratings from Moody's and Fitch should be seen as an affirmation of the BWS's creditworthiness, and will thus ensure low borrowing costs for the BWS in the bond market.
- More than $24.5 million in construction contracts and more than $3 million in professional services contracts were awarded as of June 30, 2012. The major projects include the following:
- Aging and corroded water mains within the Department's inventory of more than 2,100 miles of pipeline are systematically identified and replaced to improve system reliability, reduce main breaks, and to ensure sufficient water pressure during periods of peak demand. In conjunction with water main replacement projects, existing fire hydrants are replaced to improve fire protection and to ensure compliance with current standards. More than $15 million in new water main construction projects was awarded by the BWS. Once completed, these projects will improve the water systems in Aiea, Ala Moana, Hawaii Kai, Kakaako, Liliha, Mapunapuna, and the University areas. Design work was started for future water main replacements in Kaimuki, Kaneohe, and Manoa.
    - The Capital Projects Division continues to identify deficiencies and improve the appearance and integrity of aging BWS facilities. These facilities include water reservoirs, well and booster stations, and the administrative offices belonging to the Department. During FY 12, a major renovation of Kahana Wells was completed along with repairs to the Waahila 405 Reservoir, Waimanalo 230 Reservoir, and Waimanalo 364 Reservoir. Facility repair and renovation work was also completed at Kahana 315 Reservoir, Nuuanu 405 Reservoir, Nuuanu 640 Reservoir, Diamond Head 180 Reservoir, Alewa Heights 850 Reservoir, Punchbowl 180 Reservoir, Aiea 497 Reservoir, Aiea 977 Reservoir, Newtown 285 Reservoir, Pearl City 385 Reservoir, Waipio Heights 395 Reservoir, Mililani 994 Reservoirs No. 1 and No. 2, Makakilo 675 Reservoirs No. 1 and No. 2, and Makaha Shaft. New construction contracts were awarded to repair, renovate, repaint and/or reroof Alewa Heights Booster No. 1, Kaamilo 497 Reservoir, Kahana Wells, Kalihi Pump Station, Makaha Shaft, Manana Corporation Yard, Makakilo 440 Reservoir, Makakilo 1230 Reservoir, Maunaolu 530 Reservoir, Mililani 865 Reservoir, St. Louis Heights 640 Reservoir, and Waipahu 228 Reservoir No. 1. New design contracts were awarded for facility improvements at Aiea 277 Reservoir, Aina Koa 1100 Reservoir, Hawaii Loa Booster No. 1, Kamehame 820 Reservoir, Kapaa 272 Reservoir, and the Makaha 525 Reservoir. Design of repair work and improvements also commenced for the Beretania Engineering Building, and the Kalihi and Manana Corporation Yards.
    - Renovation projects ensure the dependable service and operational efficiency of the Department's pump and booster stations. Pump and motor replacement, motor control center replacement, and/or upgrades to electrical, power, and control wiring were completed at Maakua Well, Waipahu Wells III, Aiea Wells, Punaluu Wells II, Hoaeae Wells, and Waipahu Booster No. 1. In FY 12, construction contracts were awarded for the renovation of the mechanical and/or electrical systems at the Beretania Complex, Halawa Xeriscape Garden, Hauula Wells, Kuliouou Well, Kunia Booster, Mililani Wells III, Pearl City Shaft, Wahiawa Wells II, Waianae Wells III, Wilder Wells, Wilhelmina Rise Booster No. 1, and Wilhelmina Rise Booster No. 3. Design contracts were awarded for work at Aina Koa Booster No. 4 and Booster No. 5, Halawa Wells, Kamiloiki Booster, Nuuanu Booster, Palolo Tunnel and Chlorinator, Waialee Wells II, and the Wailupe Line Booster.

Water System Improvements. The BWS completed the water system improvement project along Farrington Highway in Nanakuli. The new 24-inch transmission line provides approximately 60-percent of the drinking water into the Leeward Coast.

- While the replacement of aging water mains help to reduce the amount of water emergencies, main breaks are still an acknowledged part of the water utility industry and can have a tremendous impact on the public. The BWS crews respond 24 hours a day, seven days a week to water emergencies. In FY 12, BWS employees responded to a total of 305 main breaks or about 15 breaks per 100 miles of pipeline. According to the American Water Works Association, water utilities nationwide should strive for roughly 25-30 breaks per 100 miles of pipeline. The BWS ratio was better than the national experience, and BWS employees were also consistently commended for their efforts to quickly repair and restore water service to customers in a timely manner, often under difficult conditions. In addition to working on pipeline repairs, BWS crews provided affected customers with water by stationing water wagons in the neighborhood and/or installing a tap on a fire hydrant during repairs. Because BWS pipelines are typically under roadways, BWS crews also cleared the area of debris and repaired the damaged roadway as quickly as possible to allow normal traffic to resume.

Water Main Breaks. BWS Field Operations crews respond to emergency water main breaks to minimize water loss and restore water service as soon as possible.

- The BWS is completing the replacement of its 14-year-old customer information and billing system with a state-of-the-art Customer Information System for improved customer servicing. Online capabilities for customer requests to initiate and terminate service have already been implemented and online account history and payment will soon be available.
- The BWS is also initiating several application system upgrade projects to improve usability, functionality, and maintainability. These projects include the Computerized Maintenance Management System, Financial Management System, the implementation of a "cloud based" Laboratory Information System, and a redesign of the BWS website.
- The BWS's nationally recognized Geographic Information System (GIS) database and applications continues to be upgraded for best in class industry functionality and performance. This system gives department users access to GIS layers and updated imagery, and integrates map service sharing with other city departments. Concurrent with this, the Global Positioning System Asset Collection and Verification project, which began last year, was completed and resulted in the mapping of 248,756 locations (e.g. hydrants, meters, and valves).
- The BWS is currently piloting a Project Information Management System which is designed to track the entire life cycle of BWS capital projects, Replacement and Facilities Improvement Projects, as well as private projects. This system should improve internal controls over project management and provide broad access to a meaningful set of project status measures and supporting data.
- The BWS initiated an IT equipment refresh program in the last quarter of FY 12, replacing old and technologically obsolete laptops and desktops with the latest hardware platforms running current applications. This program, in conjunction with the selective utilization of "thin-client" systems, assures an efficient and cost-effective end-user systems platform, and will be complete by the second quarter of Fiscal Year 2013.
- The BWS continues to upgrade facility video surveillance capabilities by deploying state-of-the-art digital video systems in conjunction with sensor based triggering systems and fencing. These upgrades have already resulted in the prevention and/or reduction of criminal activities, and the apprehension of perpetrators. Additional cameras and sensors are planned for deployment in parallel with the progress of the BWS Wireless Network Project (WNP).
- The BWS WNP continued with the addition of high speed backbone links to the Kalihi Corporation Yard and several Windward backbone sites, as well as the installation of additional wireless links to pump stations and reservoirs in Leeward Oahu. Video surveillance was also installed at each site. Plans for FY 13 call for extending the wireless network backbone to Windward Oahu and the installation of links to pump stations and reservoir from Diamond to Hawaii Kai and part of Windward Oahu.

ORGANIZATIONAL SUSTAINABILITY

Maintaining a strong, flexible organization that is able to resolve economic, regulatory, and service challenges requires that the BWS use aggressive as well as time-tested strategies to meet the third BWS objective of organizational sustainability.

- The BWS successfully processed more than 13,000 customer calls and inquiries regarding bill payments and delinquent bills during the fiscal year. The BWS also implemented online forms in April 2012, to give customers another way to contact the BWS and processed more than 2,500 forms in the three-month period.
- In October 2011, the BWS began its Call Center for customers. Prior to this, two separate groups of Customer Service Representative (CSR) responded to inquiries – one for Credit and Collection questions and another to billing and service inquiries. With the Call Center, there is one central CSR group and they assist customers with all billing, payment, and service inquiries.

- The BWS continually works with the City's Department of Emergency Management (DEM) and Hawaii State Civil Defense to insure it has the plans and procedures in place to respond effectively to emergency situations such as a tropical cyclone, an island wide power outage, pandemic flu, tsunami, or other major events. The BWS's Business Development Division manages the Department's Emergency Response Plan (ERP) to insure the Department is prepared to respond in the event of a natural or man-made disaster.
    - In November 2011, the BWS worked with law enforcement and emergency response agencies to prepare plans to support the 2011 Asia Pacific Economic Cooperation (APEC) Conference held in Honolulu. Working with the United States Secret Service, United States Department of State, the Honolulu Police and Fire Departments, DEM and other agencies, the Business Development Division prepared the BWS's APEC Operations Plan outlining the procedures and practices BWS would use to monitor, report, and respond to any water system incidences that could have impacted the conference. The plan was designed to complement the ERP and was developed in collaboration with all agency partners participating in the implementation of security measures to protect the President of the United States and dignitaries from 20 other countries while in Honolulu during APEC.
- To ensure a continuing pool of qualified employees for specialized jobs, BWS is establishing a Trades Apprenticeship Program for Plant Electrical/Electronic Equipment Repairer positions in our Water System Operations Division. These positions install, repair, and maintain the water pumping and related equipment that distributes water throughout the BWS system. Trades apprentices learn the needed skills through on-the-job training and evening classes at Honolulu Community College. Currently, the successful Pipefitter Trades Apprenticeship program graduates sufficient journey worker pipefitters to maintain needed staffing levels.
- The City's successful Po'okela Fellows program continues to provide the BWS with student fellows in various fields, such as engineering and communications. The Fellows provide the BWS with tremendous benefit by collecting needed data, conducting research, and by conducting challenging work projects. The Fellows gain invaluable knowledge about the complexities of the BWS water system and its operations. After graduation, a few of the scholars have applied and been selected to full-time BWS positions.
- The City's Engineering Student Intern program is a way for the BWS to sustain a flow of qualified candidates for engineering positions. Engineering students who are in their third and fourth year of studies are hired as part-time employees. Working alongside with professional engineers, the interns learn about the various types of engineering work performed at the BWS to get familiarized with actual engineering assignments. Upon graduation, these interns may be hired as a Civil Engineer I.
- Unique to the BWS is the Upward Evaluation Program, which is used to nurture the leadership skills of supervisors and managers. The program allows subordinates to evaluate and provide constructive feedback to their supervisor on his/her supervisory skills. In addition, the program has expanded to include peer reviews for division heads. This program is in its third year and has a participation rate of about 33 percent.
- Throughout the year, the BWS regularly recognized and expressed its appreciation for its employees' accomplishments.
    - The BWS Women Pipe Tapping Team finished second in the Women's Division at the American Water Works Association's annual conference in Dallas, Texas in June 2012. The pipe tapping contest tests the skill, strength, and speed of participants who drill into a live water main and set up a connection to a working faucet in the fastest time while maintaining industry standards. The pipe tapping team members Susan Oda, Water Meter Mechanic; Danielle Ornellas, Multi-Skilled Worker III; Carolyn Sawai, Civil Engineer IV; and Coach Gary Fernandez turned in an impressive time of two minutes, 10.41 seconds (2:10.41).
    - The BWS initiated a quarterly ceremony to recognize the significant dedication and loyalty displayed by our employees who have worked their entire careers at BWS. In this first year of the program, we recognized 92 employees: six employees with 40 years of service, 12 with 35 years, 38 with 30 years, and 25 with 36 years of service.

Service Awards. BWS employees with 25 or more years of dedicated public service are shown being recognized with a special Service Awards ceremony.