

**BOARD OF WATER SUPPLY**

CITY AND COUNTY OF HONOLULU  
630 SOUTH BERETANIA STREET  
HONOLULU, HI 96843



April 25, 2012

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HONOLULU, HAWAII

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Manager and Chief Engineer

ELLEN E. HIRAYAMA, P.E.  
Deputy Manager and Chief Engineer *el*

The Honorable Ernest Y. Martin, Chair  
Honolulu City Council  
530 S. King Street, Room 202  
Honolulu, Hawaii 96813

Dear Chair Martin:

Subject: City Council Resolution 12-13 Requesting the Board of Water Supply  
Re-examine its Policy Regarding Fire Hydrants and Sprinkler Systems

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The Board of Water Supply provides the following response to Council Resolution 12-13 that urges the Board of Water Supply to re-examine its fire hydrant policy to:

1. Determine its effect on the ability of property owners to build or renovate homes.
2. Determine the cost of providing more fire hydrants in order to provide for fire hydrants that are within reach of all residential properties.
3. Provide the Council with a map of Oahu showing the location of every fire hydrant on the island.
4. The minimum flow rate of each hydrant.
5. The distance between each hydrant.

We have the following findings to report:

1. **Determine its effect on the ability of property owners to build or renovate homes**

For the period April 5, 2011 to October 31, 2011, the Board of Water Supply (BWS) fully enforced its off-site fire protection requirements (maximum distance of 175 feet and minimum 1,000 gallons per minute (gpm) flow) for all residential building permit application approvals. During that period, 1,322 building permit applications for new single-family dwellings and alterations / renovations / additions for existing single-family dwellings were submitted to the BWS. Of the

1,322 building permit applications submitted to the BWS, 52 applications did not meet requirements.

On November 2, 2011, the BWS implemented a new maximum distance requirement of 350 feet. Of the 52 applications that previously did not meet requirements, 36 now met the new requirements and were approved by the BWS.

The remaining 16 building permit applications have had the following actions taken:

- 4 applications were approved without additional requirements through coordination with the Honolulu Fire Department (HFD).
- 6 applications have been submitted to install fire sprinkler systems of which the BWS has approved.
- The remaining 6 applications can be approved provided fire sprinkler systems are installed, however, no status updates since the time that the applicants were made aware of the fire sprinkler requirement. Of the 6 applications, 4 applications do not meet the minimum flow of 1,000 gpm and 2 applications exceed the maximum distance of 350 feet.

Since November 1, 2011 to April 10, 2012, 8 building permit applications did not meet requirements. The 8 building permit applications have the following actions taken:

- 3 applications were approved without additional requirements through coordination with the HFD.
- 3 applications can be approved provided fire sprinkler systems are installed, however, no status updates since the time that the applicants were made aware of the fire sprinkler requirement. The 3 applications exceed the maximum distance of 350 feet.
- The remaining 2 applications were recently submitted to BWS and are currently waiting the HFD's recommendation.

2. **Determine the cost of providing more fire hydrants in order to provide for fire hydrants that are within reach of all residential properties.**

A BWS study previously identified a number of areas where fire protection does not meet current Water System Standards. Of the 199 streets listed, 103 have since been upgraded. Another 27 have been partially addressed and 69 are still in the planning and design stages. The estimated construction cost of the remaining improvements totals nearly \$19 million. This investigation is on-going.

The previous study did not address the entire water system. In total, there are approximately 990 miles of pipeline installed before the fire protection requirements for new developments were added to the Water System Standards. Although the Council Resolution focuses on hydrant spacing, there are areas that may require main upsizing to meet the Standards' flow requirements. A rough estimate on the improvements required island wide for the installation of additional fire hydrants and the upgrading of under-sized mains totals just under \$600 million.

3. **Provide the Council with a map of Oahu showing the location of every fire hydrant on the island.**

A map is enclosed.

4. **The minimum flow rate of each hydrant.**

There are approximately 21,000 fire hydrants in BWS systems throughout Oahu. The design minimum flow rate of each hydrant will depend on the underlying land use classifications of the surrounding properties:

- Single Family Residential: 1,000 gpm
- Multi-Family Residential: 1,500 gpm
- Agricultural: 1,000 gpm
- Commercial: 2,000 gpm
- Industrial: 4,000 gpm

Other land uses are subject to special review and control by the Manager. If Council is interested in a minimum flow rate of any specific hydrant, our staff engineers would be able to calculate the flow rate and provide the information. It

The Honorable Ernest Y. Martin, Chair  
April 25, 2012  
Page 4

would take over a year to create a database of the flows for all 21,000 fire hydrants.

**5. The distance between each hydrant.**

The design distance between each hydrant will depend on the underlying land use classifications of the surrounding properties:

- Agriculture 700 feet
- Single family residential 350 feet
- Multi-family residential 250 feet
- Commercial 250 feet
- Industrial 250 feet

Other land uses are subject to special review and control by the Manager.

If Council is interested in a minimum distance between specific hydrants, our staff engineers would be able to measure the distance and provide the information.

If you have any questions, please call me at (808) 748-5061.

Very truly yours,

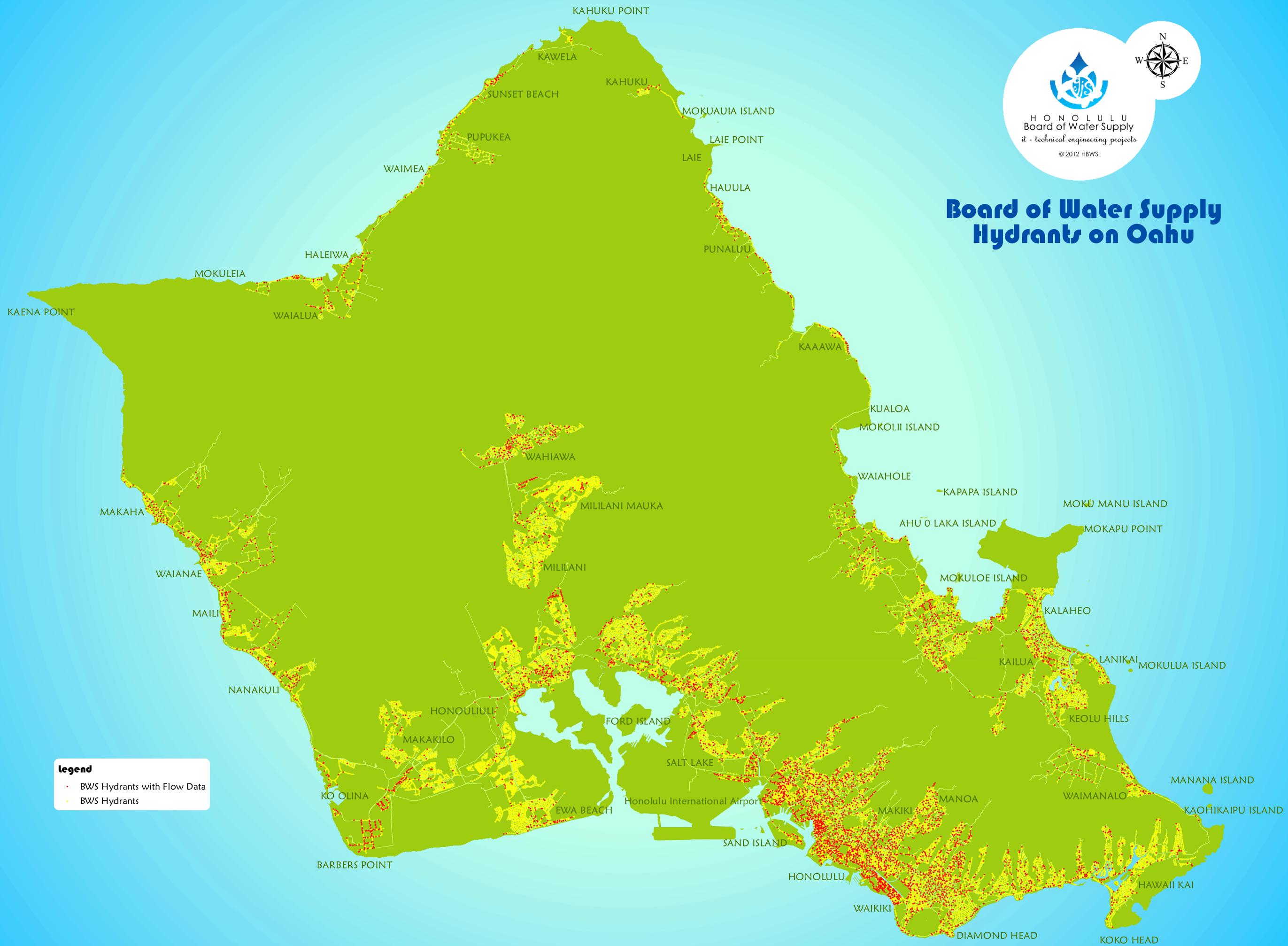


ERNEST Y. W. LAU. P.E.  
Manager and Chief Engineer

Enclosure



# Board of Water Supply Hydrants on Oahu



**Legend**

- BWS Hydrants with Flow Data
- BWS Hydrants