



DEPARTMENT OF WATER SUPPLY • COUNTY OF HAWAI'I

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March 25, 2015

Mr. Carty S. Chang, P.E., Interim Chair
State of Hawai'i
Department of Land and Natural Resources
ATTENTION: MR. W. ROY HARDY, ACTING DEPUTY DIRECTOR
Commission on Water Resource Management
P.O. Box 621
Honolulu, HI 96809

**COMMISSION ON WATER RESOURCE MANAGEMENT PRELIMINARY ORDER,
PETITION TO DESIGNATE KEAUHOU AQUIFER SYSTEM AREA AS A GROUND
WATER MANAGEMENT AREA**

In response to the State Department of Land and Natural Resources, Commission on Water Resource Management (CWRM), Preliminary Order, dated December 29, 2014, Subsection C.4., the Department of Water Supply, County of Hawai'i (DWS) submits the following:

Description of water systems

The DWS operates and maintains 23 separate water systems, consisting of: 74 water sources (63 wells, 1 shaft, 8 springs and 2 surface intakes), 198 tanks, 79 booster pump stations, 257 pressure reducing stations, and approximately 1,010 miles of pipelines.

Description of North Kona water system

The DWS North Kona Water System consists of 12 water sources, 57 tanks and nearly 200 miles of pipelines. Of the 12 water sources, 11 are deepwells and 1 is an inclined shaft. Six of the deepwells tap the high-level aquifer and the remaining 6 sources tap the basal aquifer.

The 12 sources currently pump an average of approximately 11 million gallons per day (12 month average through June 2014) serving approximately 10,300 water accounts.

The distribution system generally extends from Keāhole Airport to the north to the Keauhou resort area to the south on the makai side and the Pu'ukala area to the north to the Honalo area (Teshima's restaurant) to the south on the mauka side. The vertical extent of the service area generally covers an elevation from sea level up to approximately 1,600' in many areas and even up to the 5,000' elevation at its highest point in Kaloko Mauka.

North Kona Capital Improvement Projects

There are numerous projects, recently completed, under construction and planned in the area to reduce the pumping from basal sources, primarily the Kahalu'u Shaft, and thereby improving the water quality in the region for the long term (see attached figure).

Completed projects:

Pālani Road Transmission Waterline (from the Māmalahoa Highway down to the Palani 595' Reservoir): This project included 2 storage tanks totaling 3.0 MG of additional storage and approximately 12,700 feet of transmission waterline. Its primary purpose is to provide a major mauka-makai corridor from the high-level sources down to Kailua-Kona. When completed in 2012, immediate improvements to the water quality for portions of Kailua-Kona area resulted. Cost: \$11.5M

Keōpū-Pu'uhonua Production Well and 1.0-MG Reservoir: This 695 gpm well and reservoir project, completed in December 2009, provides an additional high-level water source for the area. Cost: \$5.4M

Wai'aha Production Well and Supporting Facilities and 2.0-MG Reservoir: This 1,400 gpm well and reservoir project also taps the high-level water source and was completed in 2006. Cost: \$4.9M

Māmalahoa Highway Waterline Improvements Phases 1 and 2: This project, completed in 2009, consists of 7,100 feet of 16-inch transmission waterline. The purpose of the project was improved transmission capacity between high-level sources along the Māmalahoa Highway, and working in conjunction with the Pālani transmission project to transport the high quality water makai. Cost: \$2.3M

Under construction:

Wai'aha Water System Improvements: The Department is participating in this private-public partnership by oversizing the water system improvements, which include two 1.0 MG storage tanks and 8,800 feet of transmission pipeline that will serve as an additional major mauka-makai corridor to bring the high quality water from the high-level sources to makai areas. Construction of the project has been completed and is currently being implemented into the existing water system. Estimated DWS Share: \$3.0M (DWS CIP)

Queen Ka'ahumanu Highway Widening, Phase 2: This project will install approximately 5 miles of 16-inch waterline from Kealakehe Parkway to Keāhole Airport which will significantly improve transmission capacity. Construction of this project began in 2011; however, it has been on hold by the State and is slated to resume in the Summer of 2015. It is anticipated to be completed by the Summer of 2017. Estimated Cost: \$3.2M (DWS CIP)

Proposed projects:

North Kona Well, Phase 1: This exploratory well project by DWS will add a high-level source to the system and will primarily serve as a back-up when existing sources are under repair. Planning, preliminary engineering, and design work for this project is expected to begin in the fall of 2015 and is anticipated to be complete in early 2017. Funding for this estimated \$1.3M project is anticipated to come from DWS CIP funds as well as Drinking Water State Revolving Funds (DWSRF).

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Wai'aha Transmission Waterline Improvements (Māmalahoa Hwy): This transmission waterline will enhance the Department's ability to utilize the existing Wai'aha Well and expand the service area. This will also reduce the dependency on the Hōlualoa Well (basal source). It is anticipated that this project will begin construction in 2016 and be completed by Spring of 2017. Funding for this estimated \$1.5M project is from DWS CIP funds.

North Kona Well, Phase 2: Upon successful completion of Phase 1, this phase will include the land acquisition and improvements to outfit the well for production including a storage reservoir and other necessary improvements to connect into the existing water system. It is estimated that the start of construction for this project will be in 2019 and completion approximately 15 months from the start of construction. It is anticipated that funding for this \$7.0M project will be from DWS CIP as well as DWSRF.

Keauhou Well, Phase 2: This project will outfit an existing high-level well including additional storage and transmission improvements to eventually bring the high-level water down to the Kahalu'u Shaft area. This project is anticipated to start in 2016 with completion around 2018. It is anticipated that funding for this \$8.0M project will be from DWS CIP as well as DWSRF.

Hinalani Street 1.0 MG Reservoir and Transmission Waterline: This tank and transmission waterline project will provide an additional route to bring the high-level water makai to the Queen Ka'ahumanu Highway. Scheduling for this project will be established at a later date and it is anticipated that the funding for this estimated \$4.0M project will be from DWS CIP.

Kalaoa 1.0 MG Reservoir and Transmission Waterline: This tank and transmission waterline project will allow for more efficient use of the existing Kalaoa Well by adding storage to the existing 0.3 MG reservoir. Scheduling for this project will be established at a later date, and it is anticipated that the funding for this estimated \$3.0M project will be from DWS CIP.

Should you have any questions, please call Mr. Kurt Inaba of our Engineering Division at (808) 961-8070, extension 238.

Sincerely yours,



Quirino Antonio, Jr., P.E.
Manager-Chief Engineer

KYI/KKO:dmj

Att.

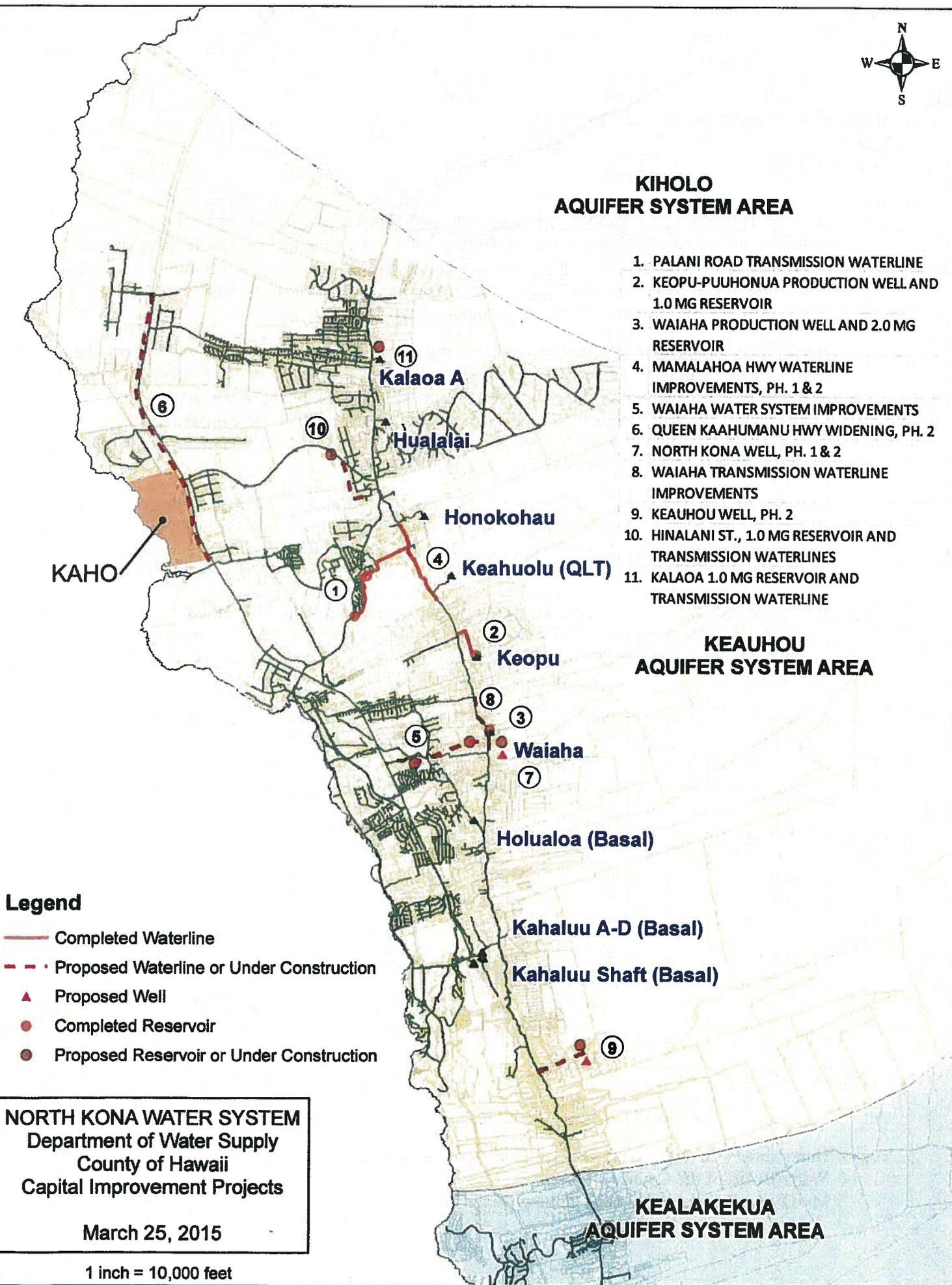
copy - Honorable William P. Kenoi, Mayor, County of Hawai'i
Water Board of the County of Hawai'i
Mr. Duane Kanuha, Director, Planning Department



KIHOLO AQUIFER SYSTEM AREA

1. PALANI ROAD TRANSMISSION WATERLINE
2. KEOPU-PUUHONUA PRODUCTION WELL AND 1.0 MG RESERVOIR
3. WAIAHA PRODUCTION WELL AND 2.0 MG RESERVOIR
4. MAMALAOHA HWY WATERLINE IMPROVEMENTS, PH. 1 & 2
5. WAIAHA WATER SYSTEM IMPROVEMENTS
6. QUEEN KAAHUMANU HWY WIDENING, PH. 2
7. NORTH KONA WELL, PH. 1 & 2
8. WAIAHA TRANSMISSION WATERLINE IMPROVEMENTS
9. KEAUHOU WELL, PH. 2
10. HINALANI ST., 1.0 MG RESERVOIR AND TRANSMISSION WATERLINES
11. KALAOA 1.0 MG RESERVOIR AND TRANSMISSION WATERLINE

KEAUHOU AQUIFER SYSTEM AREA



KEALAKEKUA AQUIFER SYSTEM AREA