UNITED STATES MARINE CORPS
MARINE CORPS BASE HAWAII
BOX 63002 KANEOHE BAY, HAWAII 96863-3002

IN REPLY REFER TO:
5214
LFD/062-16j
8 Jun 16

From: Commanding Officer, Marine Corps Base Hawaii
To: Residents, Marine Corps Base Hawaii

Subj: MARINE CORPS BASE (MCB) HAWAII KANEOHE BAY 2016 ANNUAL WATER QUALITY REPORT

Encl: (1) Board of Water Supply (BWS), City and County of Honolulu, 2016 Annual Water Quality Report

1. In 1998, the U.S. Environmental Protection Agency (EPA) put into effect regulations that require community water system operators to provide their customers an annual report on the quality of their drinking water. This letter, along with enclosure (1) describes where your water comes from, what was detected in the water in the past year, and how those results compare to standards for safe drinking water. **Test results show your drinking water meets all Federal and State standards and is safe to drink.**

2. MCB Hawaii Kaneohe Bay purchases its water from the City and County of Honolulu Board of Water Supply (BWS) and adds fluoride and chlorine prior to delivering to its customers. MCB Hawaii Kaneohe Bay also tests the water for the following: lead and copper, chromium, fluoride, total trihalomethanes (TTHM), total haloacetic acid (HAA5), asbestos, total coliform bacteria, and unregulated contaminants. Water samples are taken from various locations in the MCB Hawaii Kaneohe Bay distribution system, and analyzed by State certified laboratories. The tables below list the results of this testing for calendar year 2015. If a substance is not listed, then it was not detected.

Regulated Contaminants - MCB Hawaii Kaneohe Bay

Substance	Unit	Average	Range Min	Range Max	MCL(Allowed)	MCL (Goal)
Fluoride	*ppm*	*0.33*	*0.00*	*0.99*	*4.00*	*4.00*
TTHM	*ppb*	*2.54*	*0.8*	*7.1*	*80.00*	*None*
Chromium	*ppb*	*1.5*	*1.5*	*1.5*	*100.00*	*100.00*

Substance	Sample Year	Unit	90th Percentile Reading	Action Level	# Samples Above Action Level
Copper	*2015*	*ppm*	*0.056*	*1.300*	*0*
Lead	*2015*	*ppb*	*8.42*	*15.00*	*2*

ppm = parts per million ppb = parts per billion MCL = maximum contaminant level

Unregulated Contaminants - MCB Hawaii Kaneohe Bay

Substance	Unit	Average	Range Min	Range Max	Health Advisory
Chromium, Hexavalent	*ppb*	*1.55*	*1.5*	*1.6*	*13.00*
Strontium	*ppb*	*96*	*96*	*96*	*4000.00*
Vanadium	*ppb*	*9.35*	*9.3*	*9.4*	*21.00*

Unregulated contaminants do not have designated maximum limits but require monitoring.
ppm = parts per million ppb = parts per billion

3. If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is

primarily from materials and components associated with service lines and home plumbing. MCB Hawaii is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at http://www.epa.gov/safewater/lead.

4. A source water assessment for the wells serving MCB Hawaii Kaneohe Bay was completed in 2003, and is available for review at the MCB Hawaii Facilities Department. Additional test results and drinking water information can be found in enclosure (1). MCB Hawaii does not have routine public meetings about the drinking water system; however questions regarding MCB Hawaii Kaneohe Bay Drinking Water (including the 2003 source water assessment) can be directed to Mr. Lee Yamamoto of the MCB Hawaii Facilities Department, 257-0800.

L. H. YAMAMOTO
By direction of the Commanding Officer

2016 ANNUAL

WATER QUALITY REPORT

Federal and state law requires testing your drinking water for many different types of contaminants.

This report contains test results showing your water is **safe to drink** and meets all federal and state requirements. If a contaminant is **not listed**, then it was **not detected**.

Board of Water Supply
City and County of Honolulu
630 South Beretania Street
Honolulu, Hawaii 96843
www.boardofwatersupply.com

Enclosure (1)

Federal and state law requires testing your drinking water for many different types of contaminants. Below is a complete list.

Regulated Primary Contaminants

Acrylamide
Alachlor
Alpha emitters
Antimony
Arsenic
Asbestos (>10 micron)
Atrazine
Barium
Benzene
Beryllium
Beta/photon emitters
Bromate
Cadmium
Carbofuran
Carbon tetrachloride
Chlordane
Chlorite
Chlorobenzene
Chromium (total)
Copper
Cyanide
2,4-D
Dalapon
Di (2-ethylhexyl)adipate
Dibromochloropropane (DBCP)
o-Dichlorobenzene
p-Dichlorobenzene
1,2-Dichloroethane
1,1-Dichloroethylene
cis-1,2-Dichloroethylene
trans-1,2-Dichloroethylene
Dichloromethane
1,2-Dichloropropane (DCP)
Dinoseb
Dioxin
Di(2-ethylhexyl)phthalate
Diquat
Endothall
Endrin
Epichlorohydrin
Ethylbenzene
Ethylene dibromide (EDB)
Fecal coliform
Fluoride
Glyphosate
Haloacetic Acids (HAA5)
Heptachlor
Heptachlor epoxide
Hexachlorobenzene
Hexachlorocyclopentadiene
Lead
Lindane
Mercury (total)
Methoxychlor
Nitrate (as N)
Nitrite (as N)
Oxamyl (Vydate)
PCBs
Pentachlorophenol
Picloram
Polyaromatic hydrocarbons [benzo(a) pyrene]
Radium 226 + 228
Selenium
Simazine
Styrene
Tetrachloroethylene (PCE)
Thallium
Toluene
Total coliform
Total Trihalomethanes (TTHMs)
Toxaphene
2,4,5-TP
1,2,4-Trichlorobenzene
1,1,1-Trichloroethane
1,1,2-Trichloroethane
Trichloroethylene (TCE)
1,2,3-Trichloropropane (TCP)
Turbidity
Uranium
Vinyl chloride
Xylenes (total)

Unregulated Contaminants

Boron
Bromoform
Chlorate
Chloride
Chlorodifluoromethane
Chromium, hexavalent
Dieldrin
Manganese
Methyl t-Butyl Ether (MTBE)
Sodium
Strontium
Vanadium

Measurements In this report, one part per million (ppm) is the same as one milligram of the substance in one liter of water (mg/L). To put this into perspective, one part per million is approximately one second in 11.5 days. One part per billion (ppb) is even smaller! – about 1 second in 31.7 years.

The water serving 600 Mokapu Road has been tested and meets all Federal and State standards.
The water quality monitoring results are presented below.

The water sources serving this address are:

Source Name	Origin of Water	Treatment	Region
a) Kaluanui Wells	Groundwater	Chlorination	2
b) Maakua Well	Groundwater	Chlorination	2
c) Punaluu Wells II	Groundwater	Chlorination	2
d) Punaluu Wells III	Groundwater	Chlorination	2
e) Waihee Tunnel	Groundwater	Chlorination	2

Source Water Monitoring

The substances detected in these sources are shown below. If a substance is not shown, then it was not detected.

Regulated Contaminants (2)

Contaminant	Sample Year	Unit	Highest Average	Range Minimum	Range Maximum	MCL (Allowed)	MCLG (Goal)	Found in Sources
Barium	2014	ppm	0.004	0.002	0.004	2.000	2.000	All Sources
Chromium	2014	ppb	2.400	1.100	2.400	100.000	100.000	All Sources
Nitrate	2015	ppm	0.210	0.170	0.210	10.000	10.000	a,c

Definitions:

MCL	Maximum Contaminant Level. The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.
MCLG	Maximum Contaminant Level Goal. The level of a contaminant in drinking water below which there is no known or expected risk to health. MCGLs allows for a margin of safety.
GAC	Granular Activated Carbon filtration
Health Advisory	An estimate of acceptable drinking water levels for a chemical substance based on health effects information. Health advisory is not a legally enforceable standard.
CFU/100ml	Colony forming units per 100 milliliter
mrem/yr	Millirems Per Year (A measure of Radiation)
pCi/L	Picocuries Per Liter (A measure of Radioactivity)
ppb	Parts per billion or Micrograms per Liter
ppm	Parts per million or Milligrams per liter
ppt	Parts per Trillion or Nanograms per liter
NQ	Not Quantifiable (<means "less than")
NYA	Not Yet Applicable
N/A	Not Applicable
ND	Not Detected
*	EPA considers 50 pCi/L to be the level of concern for beta particles
(1)	Analysis by the State of Hawaii Department of Health
(2)	Analysis by the Honolulu Board Of Water Supply. Questions, call 748-5370.
LRAA	Locational running annual average is the average of sample analytical results for samples taken at a particular monitoring location during the previous four calendar quarters.
MRDL	Maximum residual disinfectant level: The highest level of a disinfectant allowed in drinking water.
MRDLG	Maximum residual disinfectant level goal: The level of a drinking water disinfectant below which there is no known or expected risk to health.

Unregulated Contaminants (Do not have designated maximum limits but require monitoring)

Contaminant	Tested By	Sample Year	Unit	Highest Average	Range Minimum	Range Maximum	Health Advisory	Found in Sources
Chlorate	(2)	2013	ppb	22.000	21.000	22.000	210.000	a,c
Chloride	(2)	2015	ppm	140.000	14.000	140.000	250 **	All Sources
Chromium, Hexavalent	(2)	2013	ppb	2.050	0.750	2.100	13.000	All Sources
Sodium	(2)	2014	ppm	32.000	12.000	32.000	60.000	All Sources
Strontium	(2)	2013	ppb	205.000	44.000	230.000	4000.000	All Sources
Sulfate	(2)	2015	ppm	18.000	2.500	18.000	250 **	All Sources
Vanadium	(2)	2013	ppb	11.000	4.600	11.000	21.000	All Sources

** Secondary Maximum Contaminant Levels (SMCLs) are standards established as guidelines to assist public water systems in managing the aesthetics quality (taste, odor, and color) of drinking water. EPA does not enforce SMCLs.

Distribution System Monitoring

Disinfection By-Products (2)

System Name	Contaminant	Unit	Min	Max	Highest LRAA	MCL (Allowed)	MCLG (Goal)
Honolulu-Windward-Pearl Harbor	Total Trihalomethanes	ppb	0.00	11.00	6.10	80	None
	Haloacetic Acids	ppb	0.00	0.00	0.00	60	None

Microbial Contaminants (2)

System Name	Contaminant	Unit	Found	MCL (Allowed)	MCLG (Goal)	Violation	Source of Contaminant
Honolulu-Windward-Pearl Harbor	Total Coliform	% of positive samples	0.78 ***	5%	0	No	Naturally present in the environment

*** Highest monthly percentage of positive samples

Residual Chlorine (2)

System Name	Sample Year	Unit	Lowest Monthly Average	Highest Monthly Average	Running Annual Average	MRDL	MRDLG
Honolulu-Windward-Pearl Harbor	2015	ppm	0.23	0.28	0.30	4	4

Lead/Copper Testing (2)

Contaminant	Sample Year	Unit	90th Percentile Reading	Action Level	# Samples Above Action Level
Copper	2015	ppm	0.058	1.300	0
Lead	2015	ppb	< 1.0	15.000	0

No violations found for calendar year 2015

Date Report Printed: 03/21/2016

2016 ANNUAL

WATER QUALITY REPORT

Supplemental Information

A separate report, containing the results of tests performed on samples of your water, accompanies this Supplemental Information.

Board of Water Supply
City and County of Honolulu
630 South Beretania Street
Honolulu, Hawaii 96843
www.boardofwatersupply.com

Is My Drinking Water Really Safe?

Yes, we take our responsibility to provide safe drinking water very seriously. Like you, we drink the same water and share the same concerns about its quality. Islandwide, the Board of Water Supply (BWS) operates over 94 water sources that are located among nine different water regions. Your tap water generally comes from those sources located within your area and not from all 94. The report shows the name of the source(s) serving your area and the region it is located in.

Each year, these sources and systems are tested for more than 80 different types of contaminants by the BWS.

The sources serving your area did not contain any of the listed contaminants except for the ones shown on the report. In all cases, the amounts found are fully compliant with the standards for safe drinking water.

Drinking Water Standards and Testing

In order to ensure that tap water is safe to drink, the Environmental Protection Agency (EPA) prescribes regulations which limit the amount of certain contaminants in water provided by public water systems. The Food and Drug Administration (FDA) regulations establish limits for contaminants in bottled water which must provide the same protection for public health. A contaminant is any substance that may pose a potential health concern if present in very large quantities.

The regulations require testing tap water for many different categories of contaminants. One category is the regulated or primary contaminants. Each has a maximum contaminant goal and maximum contaminant level. The **Maximum Contaminant Level Goal** (MCLG) is the level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety. The **Maximum Contaminant Level** (MCL) is the highest level of a contaminant that is allowed in drinking water. This limit is the standard for safe drinking water and is set by federal and/or state health agencies. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

The regulations also have testing requirements for certain unregulated contaminants. Health agencies generally do not specify MCLs or MCLGs for unregulated contaminants. However, they may establish an **action level** which is the concentration of a contaminant which, if exceeded, triggers treatment or other requirements that a water system must follow.

The rules also require testing the water in the distribution system (for trihalomethanes and coliform bacteria) and at the consumer's tap (for lead and copper).

Each contaminant category has its own monitoring frequency established by regulation. Generally, testing is performed annually. If a contaminant is detected, then testing is done quarterly. Monitoring for certain contaminants (such as alpha and beta activity) is performed less than once a year because the amount present does not change frequently. For this reason, some of the data can be more than a year old.

Where Does My Water Come From?

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. On Oahu, drinking water begins as rain falling over the Koolau and Waianae Mountain ranges. Because volcanic rock is porous, much of this rain is naturally filtered through the ground on its way to large underground formations called aquifers.

As water travels over the surface of the land or through the ground, it dissolves naturally-occurring minerals, radioactive material, and substances resulting from the presence of animals or from human activity.

Source Water Assessments, reports that evaluate the susceptibility of our drinking water sources to pollution, have been completed as of 2004. These reports are available for review by calling Erwin Kawata at (808) 748-5080.

BWS Water Sources and Systems

The Board of Water Supply operates and maintains over 94 water sources that combine to deliver an average of 145 million gallons of water per day.

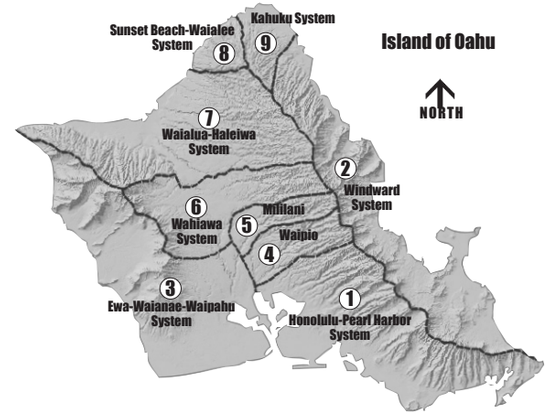
The water is supplied through a distribution system that contains over 2,100 miles of pipeline and 171 reservoirs. The entire system is monitored 24 hours a day.

What Kinds of Contaminants are a Concern to Drinking Water?

Contaminants that may be present in source water include:

Microbial contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.

Inorganic contaminants, such as salts and metals, which can be naturally-occurring or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.



Pesticides and herbicides, which may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses.

Organic chemical contaminants, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, and septic systems.

Radioactive contaminants, which can be naturally-occurring or be the result of oil and gas production and mining activities.

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants.

The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the EPA's Safe Drinking Water Hotline 1-800-426-4791 or the DOH at (808) 586-4258.

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised individuals such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their healthcare providers. EPA/CDC (Centers for Disease Control and Prevention) guidelines on appropriate means to lessen the risk of infection by cryptosporidium are available from the EPA's Safe Drinking Water Hotline at 1-800-426-4791 or the DOH at (808) 586-4258.

What Kinds of Contaminants Have Been Found in Oahu's Water?

Below is a list of substances that have been found in Oahu's water and their possible sources. See the water quality report for the substances found in your water. In all cases, the amounts present are fully compliant with the standards.

Alpha and **beta activity** occur naturally in groundwater from the erosion of natural deposits and decay of natural and man-made deposits.

Antimony is found in discharge from petroleum refineries, fire retardants, ceramics, electronics, and solder.

Arsenic may occur from the erosion of natural deposits; runoff from orchards, runoff from glass, and electronics production wastes.

Atrazine may occur from runoff from herbicide used on row crops.

Barium may occur naturally in groundwater from the erosion of natural deposits.

Boron is a mineral found in food and the environment. It occurs naturally in rocks, soil, and seawater and is also used in vitamin supplements.

Bromide occurs naturally in the environment and is not being considered for regulation.

Carbon tetrachloride is an organic chemical that may occur in drinking water from discharge from chemical plants and other industrial activities.

Chlorate is a byproduct of the drinking water disinfection process that forms when using sodium hypochlorite. According to EPA, chlorate levels more than 210 parts per billion may be a health concern.

Chlordane is a residue of a banned termiticide.

Chloride is a common element in the environment that occurs widely in soils, plants, water, and foods. It is most commonly found in nature as a salt of sodium called sodium chloride better known as table salt.

Chlorodifluoromethane also known as R-22, is a gas used for cooling in refrigeration and air conditioning systems.

Chromium may occur naturally in groundwater from the erosion of natural deposits.

Copper may occur in tap water from new or the corrosion of household copper plumbing systems, erosion of natural deposits, or leaching from wood preservatives.

Di (2-ethyhexyl) phthalate is found in discharge from rubber and chemical factories.

Dibromochloropropane (DBCP) is an organic chemical formerly used in Hawaii as a soil fumigant in pineapple

cultivation and a petroleum additive. It has been found in several groundwater wells in Central Oahu.

1,2-Dichloropropane (DCP) is an organic chemical used as a solvent and pesticide that may occur in drinking water by leaching into groundwater. It also may come from improper waste disposal and discharge from industrial chemical factories.

Dieldrin is an organic chemical once used as a pesticide for controlling ground termites and may occur in drinking water by leaching into groundwater.

Ethylene dibromide (EDB) is an organic chemical formerly used in Hawaii as a soil fumigant in pineapple cultivation and petroleum additive. It has been found in some groundwater wells in Central Oahu.

Fecal coliform bacteria and **E. Coli** can be found in human and animal fecal waste and may also be found in soil.

Fluoride occurs naturally in groundwater. According to EPA, it may also come from the erosion of natural deposits or discharged from fertilizer and aluminum factories. It can be a water additive that promotes strong teeth. BWS does not add fluoride.

Haloacetic Acids (HAA) and **Total Trihalomethanes** (TTHMs)[such as bromoform and dibromochloromethane] are by-products of drinking water chlorination.

Heptachlor epoxide is an organic chemical formed by the chemical and biological transformation of heptachlor in the environment. Heptachlor was once used as a non-agricultural insecticide. Heptachlor and its epoxide adsorbs strongly to soil.

Hexavalent chromium also known as chromium 6 is a chemical form of chromium that occurs naturally in rocks, animals, plants, soil, and in volcanic dust and gases. Water sources can be affected by hexavalent chromium naturally, or through contamination plumes from industrial centers, landfills, and improper discharge of industrial processing streams. EPA has not yet determined if low levels of hexavalent chromium in drinking water are a health risk.

Lead–If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. BWS is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may choose to have your water tested by contacting private laboratories that are certified by the State for doing drinking water analyses. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at http://www.epa.gov/safewater/lead.

Methyl t-Butyl Ether (MTBE) is used in gasoline to reduce auto emissions.

Nitrate (as nitrogen) occurs naturally in groundwater. According to EPA, nitrates may come from runoff from fertilizer use or leaching from septic tanks, sewage, or erosion of natural deposits. Nitrate in drinking water at levels above 10 parts per million (ppm) is a health risk for infants of less than six months of age. High nitrate levels in drinking water can cause blue baby syndrome. Nitrate levels may rise quickly for short periods of time because of rainfall or agricultural activity. If you are caring for an infant, you should ask for advice from your health care provider if the nitrate level is between 5 to 10 ppm.

Nitrite (as nitrogen) occurs naturally in groundwater. According to EPA, nitrites may come from runoff from fertilizer use or leaching from septic tanks, sewage, or erosion of natural deposits. Nitrite levels in drinking water in excess of the MCL could cause serious illness or be fatal to infants below the age of six months.

Radium occurs naturally in groundwater from the erosion of natural deposits.

Radon is a naturally-occurring radioactive substance found everywhere on earth. It is a colorless, odorless gas produced from the natural decomposition of uranium. Because radon is a gas, it can move from water to the air in the course of dishwashing, showering, and other water-using activities. In the atmosphere, radon is harmless because it is diluted. However, in enclosed spaces such as basements, radon levels can build up. Appropriate ventilation is the best way to prevent indoor air accumulation of radon.

Selenium is found in discharge from petroleum and metal refineries, erosion of natural deposits, and discharge from mines.

Simazine may occur from herbicide runoff.

Sodium is a common element in the environment that occurs widely in soils, plants, water, and foods. It is also found in personal care products, foods, nutritional supplements, and medications.

Strontium is an alkaline earth metal that occurs naturally in the environment. Air, dust, soil, foods, and drinking water all contain small amounts of strontium. Ingestion of small amounts of strontium is not harmful. According to EPA, strontium levels more than 4000 parts per billion per day may lead to negative health effects. There is no evidence that drinking water with trace amounts of naturally-occurring strontium is harmful.

Tetrachloroethylene (PCE) is an organic chemical that may come from leaching from PVC pipes, discharge from factories, and dry cleaners.

Total coliform bacteria are naturally present in the environment.

Trichloroethylene (TCE) is an organic chemical that may come from metal degreasing sites and other factories**.**

1,2,3-Trichloropropane (TCP) is an organic chemical formerly used as a soil fumigant in agriculture and as a gasoline additive. It has been found in a number of wells in Central Oahu.

Uranium occurs from the erosion of natural deposits.

Vanadium is a metal that naturally occurs in many different minerals and in fossil fuel deposits. Exposure to vanadium is very common, as it is a naturally occurring element that is found in many parts of the environment including at low levels in many foods. According to EPA, levels more than 21 parts per billion per day may lead to negative health effects. There is no federal drinking water standard for vanadium at this time.

Where Can I Get More Information?

Visit our web site at **boardofwatersupply.com** or call Erwin Kawata at (808) 748-5080 or Owen Narikawa at (808) 748-5851. You can also reach us by e-mail at contactus@hbws.org.

For information about the following topics, call:

Environmental Protection Agency
Federal drinking water regulations, health effects

Safe Drinking Water Hotline 1-800-426-4791

Board of Water Supply
Communications Office ..... (808) 748-5041

Water testing program (chemicals) ..... (808) 748-5840

Microbiology testing/chlorine taste ..... (808) 748-5850

Copies of your Water Quality Report ..... (808) 748-5041

State Department of Health
State and Federal drinking water standards, Hawaii drinking water monitoring/compliance, health effects

Safe Drinking Water Branch..... (808) 586-4258

How Can I Get Involved?

The Board meets at 2:00 p.m. on the fourth Monday of each month at the Board of Water Supply, 630 South Beretania Street, Honolulu, Hawaii. You are invited to participate in these meetings. For copies of Board meeting schedules and minutes, call (808) 748-5061 or visit www.boardofwatersupply.com.