



UNITED STATES MARINE CORPS
MARINE CORPS BASE HAWAII
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IN REPLY REFER TO:

5090
LFE/072-22
23 Jun 22

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

Subj: MARINE CORPS BASE HAWAII 2021 ANNUAL DRINKING WATER QUALITY
REPORT

- Encl. (1) Board of Water Supply, City and County of Honolulu, 2022 Annual Water Quality Report
Encl. (2) Educational Information including Definitions
Encl. (3) Definitions of Terms and Acronyms
Encl. (4) Joint Base Pearl Harbor Hickam, Annual Water Quality Report*

**The Joint Base Pearl Harbor Hickam, Annual Water Quality Report has not yet been released. It will be included as Encl. 4 once it released.*

1. Marine Corps Base Hawaii – Kaneohe Bay (MCBH-KB) Water System receives potable water from the Honolulu Board of Water Supply (BWS); chlorination is then added as disinfectant, prior to customer delivery. Maintenance and oversight of the MCBH-KB potable water system is a joint effort between base utility personnel and the Environmental Compliance and Protection Division (ECPD).

2. This Consumer Confidence Report (CCR) is provided in accordance with U.S. Environmental Protection Agency (EPA) regulations that require community water system operators to provide their customers an annual report on the quality of their drinking water. This letter 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 confirm MCBH drinking water meets all Federal and State standards and is safe to drink.**

3. MCBH-KB receives drinking water from BWS groundwater sources. Prior to delivering the water, it was tested and met all federal and state standards. The BWS identifies the sources supplying water to MCBH-KB as follows:

- Kaluanui Wells
- Maakua Well
- Punaluu Wells II
- Punaluu Wells III
- Waihee Tunnel

4. The BWS performs baseline monitoring of constituents in the source water according their classification as primary regulated constituents plus a rotating list of secondary ones. MCBH-KB also independently samples for the constituents show in Table 1 in its system.

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Table 1 – Constituents Sampled by MCBH KB

Constituent	Frequency	Timeframe	No. of Locations
Lead and Copper	Every 3 years	August	30
Disinfection Bi-Products (THM and HAA)	Annually	February	4
Total Coliform Bacteria	Monthly	Twice per Month	15
Escherichia Coli Bacteria	Monthly	Twice per Month	15
Asbestos	Every 10 years	August	1

The drinking water quality results for MCBH-KB are summarized in Tables 2 and 3. Please see enclosure 3 for explanation of terms used below. The concentrations of chemical amounts are expressed in terms of ppm or ppb. Microbial constituents are expressed as Present (Y) or Absent (N). Regulated substances allowable levels and goals are expressed in terms of MCLs and MCLGs. Unregulated substances are expressed in terms of action levels or health advisories (see Table 3).

Table 2 – Regulated Contaminants

Constituent	Sample Year	Unit	Result		MCL	MCL G	Common Sources
			Min	Max			
<i>Total Coliform</i>	2021	Y/N	N	N	N	N	<i>Naturally occurring</i>
<i>E-Coli</i>	2021	Y/N	N	N	N	N	<i>Human and animal fecal waste or soil</i>
<i>TTHM</i>	2021	ppb	1.90	4.00	< 80	None	<i>Water disinfection byproduct</i>
<i>HAA</i>	2021	ppb	ND	ND	< 60	None	<i>Water disinfection byproduct</i>
<i>Beta/Photon Emitters</i>	2021	pci/l	3.000	3.0	< 50	0.000	<i>Naturally-occurring in Hawaii</i>
<i>Nitrate</i>	2021	ppm	0.160	0.180	< 10.0	10.0	<i>Rainfall & agricultural activity</i>
<i>Barium</i>	2021	ppb	0.002	0.006	< 2.00	2.00	<i>Natural erosion</i>
<i>Chromium</i>	2021	ppb	ND	1.9	<100	100	<i>Erosion of natural deposits</i>
<i>Asbestos</i>	2021	MFL	ND	<4.0	<7.0	<4.0	<i>Natural and water main cement</i>

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Constituent	Sample Year	Unit	90 th Percentile Result	AL	# Samples above Limit	Common Sources
<i>Copper</i>	<i>2021</i>	<i>ppb</i>	<i><50.0</i>	<i>< 1,300</i>	<i>0</i>	<i>Corrosion of household plumbing systems</i>
<i>Lead</i>	<i>2021</i>	<i>ppb</i>	<i><2.5</i>	<i>< 15</i>	<i>0</i>	

Table 3 - Unregulated Contaminants

Constituent	Sample Year	Unit	Range		Health Advisory	Common Sources
			Min	Max		
<i>Chlorate</i>	<i>2021</i>	<i>ppb</i>	<i>12.0</i>	<i>34.0</i>	<i>210.0</i>	<i>Disinfection/with bleach</i>
<i>Chloride</i>	<i>2021</i>	<i>ppm</i>	<i>16.0</i>	<i>190.0</i>	<i>250</i>	<i>Common environmental element</i>
<i>Chromium-6</i>	<i>2021</i>	<i>ppb</i>	<i>1.3</i>	<i>2.3</i>	<i>13.0</i>	<i>Naturally and manmade source</i>
<i>Sodium</i>	<i>2021</i>	<i>ppm</i>	<i>13.0</i>	<i>35.0</i>	<i>60</i>	<i>Common environmental element</i>
<i>Strontium</i>	<i>2021</i>	<i>ppm</i>	<i>53.0</i>	<i>280.0</i>	<i>4000</i>	<i>Naturally occurring trace metal</i>
<i>Sulfate</i>	<i>2021</i>	<i>ppm</i>	<i>2.5</i>	<i>21.0</i>	<i>250</i>	<i>Naturally occurring in minerals and rocks</i>
<i>Vanadium</i>	<i>2021</i>	<i>ppb</i>	<i>6.1</i>	<i>10.0</i>	<i>21.0</i>	<i>Naturally occurring trace metal</i>

5. MCBH continued to implement a program to replace water meters across the entire installation. For water conservation purposes, it is imperative to know how much water is being consumed relative to how much is coming in. Without accurate metering at the buildings, this cannot be accomplished. This also has the ancillary benefit of identifying water losses (leaks and/or main breaks) in the distribution system.

6. Listed MCBH properties (Leeward) are served by the Joint Base Pearl Harbor Hickam (JBPHH) water system.

- a. Manana Housing
- b. Camp Smith
- c. Puuloa Rifle Range
- d. Pearl City Annex (PCA) (warehouses only)
- e. Marine Barracks is a Navy neighborhood on JBPHH that is the historical location of the marine barracks during WW2. (i.e., not a MCBH neighborhood).

7. The JBPHH water system (i.e., Navy system) is supplied by ground water sources in a different region than MCBH. Three (3) well shafts supply the Navy System: the Waiawa Shaft, Red Hill Shaft, and Halawa Shaft.

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8. In late 2021, the Red Hill shaft was found to have contamination issues and was shutdown. As a result of the above incident the Navy embarked on an extensive water restoration effort. All areas impacted by the Red Hill shaft were supplied with alternative water during this effort. Extensive sampling and testing, along with a large-scale flushing program were included in the response. The sampling and analysis plan and overview can be found at https://www.cpf.navy.mil/Portals/52/Downloads/JBPHH-Water-Updates/SAP_Fact_Sheet.pdf?ver=8MFr3f6AypEZsRBpuLf24w%3d%3d×tamp=1639797697537

a. The neighborhoods were divided into Zones which were sampled, street flushed and home flushed. JBPHH Water Updates website, including the Map of the Zones can be found at: <https://www.cpf.navy.mil/JBPHH-Water-Updates/>

b. The Public Advisory for flushing of Zone G1 (Camp Smith) was dated 11/29/21; amended on 3/3/22 as follows: “At this time, the water is determined to be safe for drinking in Flushing Zone G1; and all Navy water system users within this zone may now use their water for all purposes including drinking, cooking, and oral hygiene. This includes consumption by pets.”

9. Manana Housing water is mainly supplied by Waiawa Shaft water. A booster pump failure in September 2021 led to cross-over to all BWS supplied water, just prior to the (Red Hill shaft) fuel contamination. With different source water, Manana Housing residents were not impacted by the Red Hill shaft contamination, and Manana Housing was not placed under the DOH health advisory.

10. Puuloa Rifle Range (area), is adjacent to Zone A3, Iroquois Point (Kapilina Beach Homes). The Public Advisory for Zone A3 dated 11/29/21, was amended on 3/12/22 as follows: “At this time, the water is determined to be safe for drinking in Flushing Zone A3; and all Navy water system users within this zone may now use their water for all purposes including drinking, cooking, and oral hygiene. This includes consumption by pets.

11. Should you have any questions, please feel free to contact Richard Mestan, MCBH Environmental Compliance and Protection Division at 808-257-3694W, 407-583-7105M, richard.mestan@usmc.mil

Sincerely,

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J. P. Hart
Major, U. S. Marine Corps
Director, Environmental Compliance
and Protection Division
By direction of the Commanding Officer

2 0 2 2 A N N U A L

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

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

Regulated Primary Contaminants

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

Unregulated Contaminants

Boron	Chlorodifluoromethane	Manganese	Radon
Bromacil	Chromium, hexavalent	Methyl t-Butyl Ether (MTBE)	Sodium
Bromoform	DCPA Mono/Di-acid degradates	Perfluoropentanoic acid (PFPeA),	Strontium
1-Butanol	Dieldrin	perfluorooctanoic acid (PFOA),	Sulfates
Chlorate	HAA6Br	and perfluorohexanesulfonic acid	Vanadium
Chloride	HAA9	(PFHxS)	

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.

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. The testing is performed either annually, every two years or every three years as determined by federal and state drinking water regulations.

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.

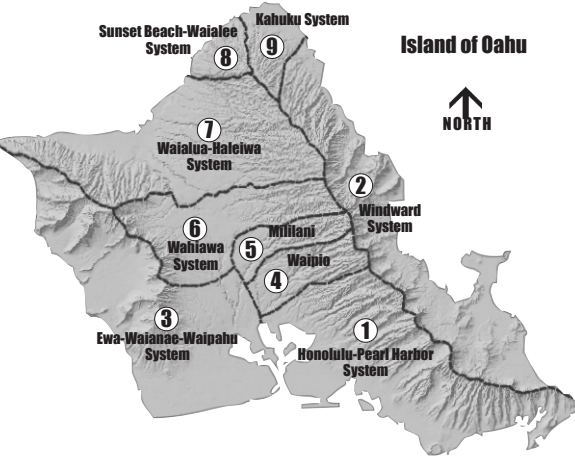
Organic chemical contaminants, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and can also come from gas stations, urban storm-water runoff, and septic systems.

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.

Bromacil is a broad-spectrum herbicide used for weed control in citrus and pineapple.

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

1-Butanol is used as a solvent in paints, surface coatings, lacquers, thinners, pharmaceutical formulations, waxes, and resins. The testing of this contaminant is currently being performed and reported under the Fourth Unregulated Contaminant Monitoring Rule (UCMR4). The purpose of UCMR4 is to collect data on contaminants that may be present in drinking water. The United States Environmental Protection Agency then uses this information to decide if changes to the regulations are needed.

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.

Chromium, Hexavalent 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.

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.

DCPA Mono/Di-acid degradates are environmental breakdown products of the herbicide DCPA also known as Dacthal. DCPA is used to control weeds in ornamental turf and plants, strawberries, seeded and transplanted vegetables, cotton, and field beans.

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.

HAA6Br are disinfection byproducts that are formed when chlorine is added to disinfect drinking water react with naturally occurring organic and inorganic matter present in water. The six brominated haloacetic acids (HAA6Br) are Bromochloroacetic Acid, Bromodichloroacetic Acid, Dibromoacetic Acid, Dibromochloroacetic Acid, Monobromoacetic Acid, and Tribromoacetic Acid. HAA6Br is currently being tested and reported under the Fourth Unregulated Contaminant Monitoring Rule (UCMR4). The purpose of UCMR4 is to collect data on contaminants that may be present in drinking water. The United States Environmental Protection Agency then uses this information to decide if changes to the regulations are needed.

HAA9 are disinfection byproducts that are formed when chlorine or chloramine is added to disinfect drinking water react with naturally occurring organic and inorganic matter present in water. The nine haloacetic acids (HAA9) are Bromochloroacetic Acid, Bromodichloroacetic Acid, Chlorodibromoacetic Acid, Dibromoacetic Acid, Dichloroacetic Acid, Monobromoacetic Acid, Monochloroacetic Acid, Tribromoacetic Acid, and Trichloroacetic Acid. HAA9 is currently being tested and reported under the Fourth Unregulated Contaminant Monitoring Rule (UCMR4). The purpose of UCMR4 is to collect data on contaminants that may be present in drinking water. The United States Environmental Protection Agency then uses this information to decide if changes to the regulations are needed.

Haloacetic Acids (HAAs) and **Total Trihalomethanes** (TTHMs)[such as bromoform, bromodichloromethane, 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.

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>.

Manganese is a naturally-occurring element that can be found ubiquitously in the air, soil, and water. It is also used in the manufacturing of steel alloys, ceramics, glass, and as a food additive. The United States Environmental Protection Agency secondary drinking water maximum contaminant limit (SMCL) for manganese is 0.05 milligrams per Liter (50 parts per billion). Concentrations in water above the SMCL may create black to brown color staining and a bitter metallic taste.

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

Nitrate (as nitrogen) occurs naturally in groundwater. According to EPA,

nitrate 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.

Perfluoropentanoic acid (PFPeA) , perfluorooctanoic acid (PFOA) and perfluorohexanesulfonic acid (PFHxS) are chemicals known as perfluoroalkyl substances (PFAS) that have been used extensively in consumer products such as carpets, clothing, fabrics for furniture, paper packaging for food, and other materials (for example, cookware) designed to be waterproof, stain-resistant or non-stick. They have been used in fire-retarding foam and can be found in food packaging, consumer products, house dust, and drinking water.

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.

Sulfates are naturally occurring substances that are found in minerals, soil, and rocks. They are present in ambient air, groundwater, plants, and food. The principal commercial use of sulfate is in the chemical industry. Sulfates are discharged into water in industrial wastes and through atmospheric deposition. According to the United States Environmental Protection Agency, studies suggest sulfate levels more than 500 mg/L can act as a mild laxative.

Tetrachloroethylene (PCE) is used in dry cleaning, textile processing and as a degreaser. It can be discharged 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 website at **boardofwatersupply.com** or call Erwin Kawata at (808) 748-5080. You can also reach us by e-mail at contactus@hbw.s.org.

For information about the following topics, call:

Environmental Protection Agency

Federal drinking water regulations, health effects

Safe Drinking Water Hotline1-800-426-4791

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.



Board of Water Supply

630 South Beretania Street • Honolulu, HI 96843

www.boardofwatersupply.com

2 0 2 2 A N N U A L

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, HI 96843

www.boardofwatersupply.com

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		MCL (Allowed)	MCLG (Goal)	Found in Sources
				Minimum	Maximum			
Barium	2021	ppm	0.006	0.002	0.006	2.000	2.000	All Sources
Beta/Photon Emitters	2021	pci/l	3.000	3.000	3.000	50.000	0.000	c
Chromium	2021	ppb	1.500	ND	1.900	100.000	100.000	All Sources
Nitrate	2021	ppm	0.180	0.160	0.180	10.000	10.000	b,e

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		Health Advisory	Found in Sources
					Minimum	Maximum		
Chlorate	(2)	2021	ppb	34.000	12.000	34.000	210.000	All Sources
Chloride	(2)	2021	ppm	190.000	16.000	190.000	250 **	All Sources
Chromium, Hexavalent	(2)	2021	ppb	2.300	1.300	2.300	13.000	All Sources
Sodium	(2)	2021	ppm	35.000	13.000	35.000	60.000	All Sources
Strontium	(2)	2021	ppb	280.000	53.000	280.000	4000.000	All Sources
Sulfate	(2)	2021	ppm	21.000	2.500	21.000	250 **	All Sources
Vanadium	(2)	2021	ppb	10.000	6.100	10.000	21.000	All Sources

**Secondary Maximum Containment 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	16.00	9.00	80	None
	Haloacetic Acids (HAA5)	ppb	0.00	15.00	3.88	60	None
		Unit	Min	Max	Average	MCL (Allowed)	MCLG (Goal)
	Haloacetic Acids (HAA6BR)	ppb	0.00	1.50	0.82	NYA	NYA
	Haloacetic Acids (HAA9)	ppb	0.00	1.50	0.82	NYA	NYA

Microbial Contaminants (2)

System Name	Contaminant	Number of positive E. coli samples found	Violation (Yes/No)	Number of assessments required to perform	Major sources in drinking water
Honolulu-Windward-Pearl Harbor	E. Coli	0	No	0	Human and animal fecal waste

Level 1 Assessment: A Level 1 assessment is a study of the water system to identify potential problems and determine (if possible) why total coliform bacteria have been found in our water system.
Level 2 Assessment: A Level 2 assessment is a very detailed study of the water system to identify potential problems and determine (if possible) why an E. coli MCL violation has occurred and/or why total coliform bacteria have been found in our water system on multiple occasions.

Residual Chlorine (2)

System Name	Sample Year	Unit	Lowest Monthly Average	Highest Monthly Average	Running Annual Average	MRDL	MRDLG
Honolulu-Windward-Pearl Harbor	2021	ppm	0.28	0.31	0.30	4	4

Lead/Copper Testing (2)

Contaminant	Sample Year	Unit	90th Percentile Reading	Action Level	# Samples Above Action Level
Lead	2021	ppb	<1.000	15.000	0
Copper	2021	ppm	0.039	1.300	0

No violations found for calendar year 2021

EDUCATIONAL AND ADDITIONAL INFORMATION

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).

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons 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 health care providers. EPA/CDC guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the Safe Drinking Water Hotline (1-800-426-4791).

The drinking water supplied to MCBH, comes from groundwater sources managed by the BWS. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity.

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 byproducts 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.

In order to ensure that tap water is safe to drink, EPA prescribes regulations which limit the amount of certain contaminants in water provided by public water systems. Food and Drug Administration regulations establish limits for contaminants in bottled water which must provide the same protection for public health.

If present, elevated levels of lead can cause serious health problems, especially for pregnant

EDUCATIONAL AND ADDITIONAL INFORMATION

women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. MCBH Public Water System 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 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 www.epa.gov/safewater/lead.

A source water assessment for the BWS wells serving MCBH Kaneohe Bay was completed in 2003 and is available from MCBH ECPD. MCBH does not conduct public meetings about the drinking water system, however questions regarding MCBH the assessment and in general, can be directed to MCBH ECPD, Attention Major Hart, Director, (808) 257-5640 or Ed Zuelke, Compliance Chief, (808) 257-7142.

Detailed information on the sampling and analytical results can be obtained from Richard Mestan, MCBH ECPD, richard.mestan@usmc.mil, (808) 257-3694.

DEFINITIONS OF TERMS AND ACRONYMS

< - "less than"

AL - Action Level. The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.

CFU/100ml - Colony forming units per 100 milliliters of water sample.

Contaminant. Contaminant is any physical, chemical, biological, or radiological substance or matter in water, and can be either healthy or unhealthy, depending on the particular substance and concentration. It could also be a physical parameter monitored like pH or temperature.

DOH Environmental Action Level (EAL). The DOH Environmental Action Levels (EALs) are concentrations of contaminants in drinking water and other media (e.g., soil, soil gas, and groundwater) below which the contaminants are assumed to not pose a significant threat to human health or the environment. Exceeding these EAL does not necessarily indicate that contamination at the site poses environmental hazards but generally warrants additional investigation.

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.

Maximum Contaminant Level (MCL). 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.

Maximum Contaminant Level Goal (MCLG). The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allows for a margin of safety.

ND - Not Detected.

PFAS. Per- and polyfluoroalkyl substances (PFAS) are a group of man-made chemicals that includes PFOA, PFOS, GenX, and many other chemicals. PFAS is found in firefighting foam, Aqueous Film Forming Foam (AFFF).

Project Specific Screening Level. DOH uses multiple criteria to assess the safety of the drinking water including maximum contaminant levels (MCLs), previously established environmental action levels (EALs) and incident specific parameters (ISPs).

Synthetic Organic Compounds (SOCs)/Semi-Volatile Organic Compounds (SVOCs). SOCs and SVOCs may be used interchangeably and are man-made, organic (carbon-based) chemicals that are less volatile than Volatile Organic Contaminants (VOCs). They are used as pesticides, defoliants, fuel additives, and as ingredients for other organic chemicals.

Total Petroleum Hydrocarbons (TPH). TPH is a term used to describe a large family of several hundred chemical compounds that come from crude oil. Crude oil is used to make

DEFINITIONS OF TERMS AND ACRONYMS

petroleum products, which can contaminate the environment. TPH is comprised of detected results from TPH-Gasoline, TPH-Diesel, and TPH-Oil.

Total Organic Carbon (TOC). TOC is naturally present in the environment, but also can be an indicator of contamination, including petroleum or other sources.

Total Trihalomethanes (TTHM). TTHM is the sum of the concentration in milligrams per liter of the trihalomethane compounds (trichloromethane [chloroform], dibromochloromethane, bromodichloromethane and tribromomethane [bromoform]).

Units. A unit is the concentration of contaminant found in the water. For this report, the units are expressed in U.S. Standard Units.

U.S. Standard Unit (Name)	Acronym	Equivalent International System of Units (Name)	Acronym
parts per million	ppm*	milligrams per Liter	mg/L
parts per billion	ppb*	micrograms per Liter L	µg/L
parts per trillion	ppt	nanograms per Liter	ng/L

*One (1) part per million (ppm) is 1,000 parts per billion (ppb).

Volatile Organic Compounds (VOCs). VOCs are a class of chemicals that contain carbon and evaporate, or volatilize, easily into air at room temperature. VOCs are found in a variety of commercial, industrial, and residential products, including gasoline, solvents, cleaners and degreasers, paints, inks and dyes, and pesticides.