



# Water Quality Report

## Joint Base Pearl Harbor-Hickam Water System

(Waiawa, Aiea-Halawa & Red Hill Sources)

This report meets federal and state requirements for Consumer Confidence Reports. This report is updated annually and reflects monitoring data collected from Jan 1 - Dec 31, 2022.

The Navy is pleased to provide you with this year's annual Water Quality Report for the Joint Base Pearl Harbor-Hickam (JBPHH) Drinking Water System.

This pamphlet provides information about the water delivered to you during the 2022 calendar year. It gives information on where your water comes from, what it contains, and how it compares to established standards for safe drinking water.

Due to the November 20, 2021, release at Red Hill, all drinking water for JBPHH now comes from the Waiawa Shaft (see page 2).

For more information on the Red Hill Release, Response, and Restoration efforts, please see: <https://jbphh-safewaters.org/>

The Navy's goal is, and always has been, to provide you safe and dependable drinking water.

### Water Provider

Naval Facilities Engineering Systems Command (NAVFAC) Hawaii operates the water system servicing your area. As the Navy water provider in the State of Hawaii (State), we primarily supply water to military installations and housing.

### Drinking Water Standards

The Environmental Protection Agency (EPA) and State regulations require us to test your water for contaminants on a regular basis, making sure it is safe to drink, and to report our results accordingly.

To ensure that tap water is safe to drink, EPA regulations limit the amount of certain contaminants in water provided by public water systems. The Food and Drug Administration does the same for bottled water.

In this latest compliance monitoring period (Jan 1 – Dec 31, 2022), we conducted tests for over 70 contaminants that have potential for being found in your drinking water. Tables 1-1, 1-2, 1-3, 1-4, and 1-5 show the concentration levels of regulated contaminants found in your water. In all cases, the levels measured were below EPA and State requirements for safe drinking water.

We are continually working to protect your drinking water from contaminants. The State's Department of Health (DOH) completed the Source Water Assessment in 2004 which identifies the susceptibility of your water supply to contamination. The source water assessment is available for review by contacting NAVFAC Hawaii Public Affairs, at 808-457-7497.

### Source of Water

Historically, your drinking water comes from the Waimalu and Moanalua groundwater aquifer systems via three supply wells/shafts: Waiawa, Aiea-Halawa, and Red Hill. Groundwater is naturally filtered as it travels from the surface to the aquifers below ground. The water is pumped up from the aquifer, disinfected, fluoridated, and piped into the JBPHH drinking water distribution system.

Starting on 16 November 2021 and through March 2022, due to pump issues, the United States Marine Corps Manana

housing area was supplied with water from the Honolulu Board of Water Supply's (BWS) Pearl City Shaft and Well 1.

The Red Hill and Aiea-Halawa shafts were taken offline on November 28, 2021 and December 3, 2021, respectively, due to the Red Hill Shaft Incident (see page 2). Since December 3, 2021, drinking water for the JBPHH Water System has been supplied solely by the water from the Waiawa Shaft and will continue to be for the foreseeable future.

### Possible Source of Contaminants

The sources of drinking water (both tap water and bottled water) include: rivers, lakes, streams, ponds, reservoirs, springs and wells. As water travels over the surface of the land or through the ground, it dissolves naturally-occurring minerals. It can also pick up other substances resulting from the presence of animals or human activity. 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 the 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 at 1-800-426-4791.

### Potential Contaminants

**Contaminants that may be present in your 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 storm water 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 storm water 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 storm water runoff, and septic systems.

**Radionuclide contaminants** – which can be naturally-occurring or be the result of oil and gas production and mining activities.

**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. NAVFAC 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 two minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may request to have the Navy test your water. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available at: [www.epa.gov/safewater/lead](http://www.epa.gov/safewater/lead)

### Navy Water Requirements

In accordance with Navy policy, chlorine and fluoride are added to your water supply after the water is pumped from the ground. The Navy's goal is to maintain concentrations of approximately 0.7 parts per million (ppm) for fluoride and 0.2 ppm for chlorine throughout the distribution system.

## 2021 Red Hill Shaft Incident

On November 20, 2021, a mixture of JP-5 (jet fuel) and water was released from a fire suppression drain line into the drinking water in the Red Hill Shaft. The Red Hill Shaft has been isolated and offline since November 28, 2021. On November 29, 2021, DOH issued a Health Advisory for the JBPHH Public Water System recommending, “All Navy water system users to avoid using the water for drinking, cooking, or oral hygiene. Navy water system users who detect a fuel odor from their water should avoid using the water for drinking, cooking, bathing, dishwashing, laundry, or oral hygiene.”

As a result of the fuel release, the Navy, in cooperation with DOH, EPA, and the U.S. Army, has implemented a set of plans and corrective actions to ensure safe drinking water and restore/recover the aquifer and drinking water system. The plans include: [Red Hill Shaft Recovery and Monitoring Plan](#); [Drinking Water Distribution System Recovery Plan](#); and [Drinking Water Sampling Plan](#). PDFs of these documents are available at:

[www.cpf.navy.mil/JBPHH-Water-Updates](http://www.cpf.navy.mil/JBPHH-Water-Updates)

The Drinking Water Distribution System Recovery Plan divided the JBPHH Water System and Aliamanu Military Reservation Water System into 19 zones and detailed standard operating procedures for the flushing and sampling of each of the zones. High-volume flushing of the Navy drinking water distribution system (all water mains/laterals/buildings) with 3 to 5 volumes of clean water from the Waiawa Shaft was conducted to restore safe drinking water to all Navy Water System users. Other corrective measures, such as fixture replacement, were also implemented where appropriate. Extensive contaminant testing was also conducted to confirm that system flushing was effective. Table 1-6 shows the levels of contaminants detected in samples collected while the DOH Health Advisory was still in effect, as well as the level of contaminants after flushing and other corrective actions.

On March 18, 2022, after verification of recovery efforts and a thorough review of sample results, the DOH amended the health advisory and declared the drinking water safe for all 19 zones. To ensure a continuous supply of safe drinking water, the Navy has implemented a Long-Term Monitoring plan and will continue to conduct testing in all zones over a two-year period. All drinking water sampling results are compiled and published on our Safe Waters website designed to provide the public access to the most recent data reports. Sampling results will also be included in future Water Quality Reports. Drinking water sampling results and updates to the ongoing efforts to maintain safe drinking water are available at:

<https://jbphh-safewaters.org>

## Tier 1 Public Notification Rule

Per Hawaii Administrative Rules (HAR) 11-20-18(b)(1)(G) a public water system must provide Tier 1 public notice within 24-hours for all national primary drinking water regulation violations and other situations as determined by the State. JBPHH was required to publish a Tier 1 public notification within 24 hours of confirmation of a fuel contamination in the drinking water system. The Navy conducted ongoing public outreach to JBPHH water users throughout the incident notifying them of the contamination and recovery efforts. However, the Navy initially failed to provide a Tier 1 public notification with all required specific components to JBPHH water users and was issued a Notice of Violation by DOH on May 12, 2022. On June 30, 2022, the Navy posted an administrative notice on the Public Notice page at: <https://jbphh-safewaters.org>. This notice includes an explanation of the drinking water contamination, actions taken by the Navy to remediate the situation and identifies the point of contact for more information. The PDF notification is available at:

[https://jbphh-safewaters.org/public/administrative\\_notice\\_no\\_0\\_amended\\_june\\_30.pdf](https://jbphh-safewaters.org/public/administrative_notice_no_0_amended_june_30.pdf)

## Concerns/Additional Copies

For questions and/or information, please contact NAVFAC Hawaii Public Affairs at 808-457-7497. For additional copies of this and other Navy water reports, go to:

- <https://cnrh.cnic.navy.mil/Operations-and-Management/Environmental/Water-Quality-Information/>
- <https://pacific.navfac.navy.mil/Facilities-Engineering-Commands/NAVFAC-Hawaii/About-Us/Hawaii-Documents/Water-Quality-Reports/>

*Please share this information with all other people who drink this water, especially those who may not have received this notice.*

## Official Address

**Naval Facilities Engineering Systems  
Command, Hawaii  
400 Marshall Road, JBPHH, HI 96860-3139**

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# Water Quality Data Table

The following tables list contaminants that were detected during the latest compliance sampling period (Jan 1 – Dec 31, 2022) required by EPA and State regulations. The water samples were collected from either the source water or distribution system and analyzed by the State, BWS and/or the Navy. The presence of contaminants does not necessarily indicate that the water poses a health risk. Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. You can obtain more information about contaminants and potential health effects by calling the EPA's Safe Drinking Water Hotline 1-800-426-4791 or the State's Department of Health at 808-586-4258.

**Contaminants in the Navy's Source Water**

**Table 1-1**

Contaminants (units)	MCL (Allowed)	MCLG (Goal)	Highest Level Detected	Range of Detection	Year of Sample	Typical Sources of Contaminants	Violation
<b>Inorganic Contaminants</b>							
Barium (ppm)	2	2	nd	nd <sup>1</sup>	2022	Erosion of natural deposits	No
Chromium (total) (ppb)	100	100	nd	nd <sup>1</sup>	2022	Naturally-occurring	No
Fluoride (ppm)	4	4	0.63	0.63 <sup>1</sup>	2022	Erosion of natural deposits; Water additive which promotes strong teeth	No
Lead (ppb)	AL = 15	0	nd	nd <sup>1</sup>	2022	Residue from man-made pollution such as auto emissions and paint; lead pipe, casing, and solder	No
Copper (ppm)	AL = 1.3	1.3	nd	nd <sup>1</sup>	2022	Corrosion of household plumbing systems; Erosion of natural deposits	No
Nitrate (ppm)	10	10	0.5	0.5 <sup>1</sup>	2022	Runoff from fertilizer use; Erosion of natural deposits	No
<b>Organic Contaminants</b>							
Chlordane (ppb)	2	0	nd	nd	2022	Residue of banned termiticide	No
Heptachlor epoxide (ppt)	200	0	nd	nd	2022	Breakdown of heptachlor (banned pesticide)	No
<b>Unregulated Contaminants<sup>3,7</sup></b>							
Bromide <sup>7</sup> (ppb)	n/a	n/a	765	124 – 765	2018 <sup>2</sup>	Naturally-occurring	n/a
Chloride <sup>8</sup> (ppm)	250 <sup>4</sup>	n/a	35	35 <sup>1</sup>	2022	Naturally-occurring	n/a
Dieldrin (ppb)	n/a	n/a	nd	nd	2022	Residue of banned insecticide	n/a
Manganese <sup>8</sup> (ppb)	n/a	n/a	nd	nd	2020 <sup>2</sup>	Naturally-occurring	n/a
Sodium (ppm)	n/a	n/a	25	25 <sup>1</sup>	2022	Naturally-occurring	n/a
Sulfate <sup>8</sup> (ppm)	250 <sup>4</sup>	n/a	nd	nd <sup>1</sup>	2022	Naturally-occurring	n/a

**Contaminants in the BWS Source Water (Serving Manana Housing)**

**Table 1-2**

Contaminants (units)	MCL (Allowed)	MCLG (Goal) <sup>2</sup>	Highest Average Level Detected	Range of Detection	Year of Sample	Typical Sources of Contaminants	Violation
<b>Regulated Contaminants</b>							
1,2,3-Trichloropropane (ppb)	0.6	0	0.050	0.049 – 0.050	2022	Fumigant previously used in agriculture	No
Barium (ppm)	2	2	0.004	0.003 – 0.004	2022	Erosion of natural deposits	No
Chromium (ppb)	100	100	0.975	nd – 1.200	2022	Naturally-occurring	No
Fluoride (ppm)	4	4	0.062	0.055 – 0.062	2022	Erosion of natural deposits; Water additive which promotes strong teeth	No
Nitrate (ppm)	10	10	0.840	0.670 – 0.890	2022	Runoff from fertilizer use; Erosion of natural deposits	No
<b>Unregulated Contaminants<sup>3,7</sup></b>							
Chlorate <sup>7</sup> (ppb)	n/a	n/a	18.000	15.000 – 18.000	2022	Byproduct of the disinfection process	n/a
Chloride <sup>8</sup> (ppm)	250 <sup>4</sup>	n/a	64.500	38.000 – 66.000	2022	Naturally-occurring	n/a
Chromium, hexavalent <sup>7</sup> (ppb)	n/a	n/a	1.300	1.100 – 1.300	2022	Naturally-occurring	n/a
Dieldrin (ppb)	n/a	n/a	0.009	nd – 0.014	2022	Residue of banned pesticide	n/a
Sodium (ppm)	n/a	n/a	36.000	31.000 – 36.000	2022	Naturally-occurring	n/a
Strontium <sup>7</sup> (ppb)	n/a	n/a	81.000	62.000 – 81.000	2022	Naturally-occurring	n/a
Sulfate <sup>8</sup> (ppm)	250 <sup>4</sup>	n/a	12.500	9.100 – 13.000	2022	Naturally-occurring	n/a
Vanadium <sup>7</sup> (ppb)	n/a	n/a	10.000	9.300 – 10.000	2022	Naturally-occurring	n/a

**Contaminants in the Distribution System**

**Table 1-3**

Contaminants (units)	MCL (Allowed)	MCLG (Goal)	Highest Level Detected	Range of Detection	Year of Sample	Typical Sources of Contaminants	Violation
Lead (ppb)	AL = 15	0	nd <sup>5</sup>	nd – 14.12	2022	Residue from man-made pollution such as auto emissions and paint; lead pipe, casing, and solder	No
Copper (ppm)	AL = 1.3	1.3	0.103 <sup>5</sup>	nd – 0.132	2022	Corrosion of household plumbing systems; Erosion of natural deposits	No
Chloride <sup>8</sup> (ppm)	250 <sup>4</sup>	n/a	45	35 – 45	2022	Naturally-occurring	n/a
Fluoride (ppm)	4	4	0.80	nd – 0.80	2022	Erosion of natural deposits; Water additive which promotes strong teeth	No

**Disinfection Agent**

**Table 1-4**

Contaminants (units)	MRDL (Allowed)	MRDL G (Goal)	Highest Average Level Detected	Range of Detection	Year of Sample	Typical Sources of Contaminants	Violation
Residual Chlorine (ppm)	4	4	0.6 <sup>6</sup>	0.2 – 1.2	2022	Water additive used to control microbes	No

**Disinfection Byproducts**

**Table 1-5**

Contaminants (units)	MCL (Allowed)	MCLG (Goal)	Highest Level Detected	Range of Detection	Year of Sample	Typical Sources of Contaminants	Violation
Total Trihalomethanes (ppb)	80	n/a	5.50	1.84 – 5.50	2022	Byproduct of drinking water disinfection	No

As previously described on page 2, after the November 20, 2021 fuel release and issuance of the DOH Health Advisory, extensive testing was conducted to initially determine the level of contamination present, and later to confirm that system flushing was effective. Table 1-6 shows the levels of contaminants detected in Long-Term Monitoring samples collected in 2022, as well as the level of contaminants after flushing and other corrective actions.

**Contaminant Detections in Distribution System/Residences During Drinking Water Long-Term Monitoring Plan**

**Table 1-6**

Table Contaminants (units)	MCL (Allowed)	Highest Contaminant Level Detected	Contaminant Level After Corrective Actions
Antimony (ppb)	6	4.80	n/a
Barium (ppm)	2	0.0375	n/a
Chromium (ppb)	100	19.6	n/a
Copper (ppm)	AL = 1.3	0.460	n/a
Lead (ppb)	AL = 15	63.4	Hydrant bracketing samples, flushing, and DOH/Navy split-sampling yielded non-detect.
Selenium (ppb)	50	25.3	n/a
Mercury (ppb)	2	3.9	Faucet replaced, flushed, and resampled. Resamples yielded non-detect.
Total Trihalomethanes (ppb)	80	68.7	n/a
Total Petroleum Hydrocarbons (diesel) (ppb)	ISP = 266	166	n/a
Total Petroleum Hydrocarbons (gasoline) (ppb)	ISP = 266	58.9	n/a
Total Petroleum Hydrocarbons (oil) (ppb)	ISP = 266	159	n/a

**Potential health effects from long-term exposure above the MCL, EAL, or AL**

- Lead:** Delays in physical or mental development in infants and children; children could show slight deficits in attention span and learning abilities; Adults can develop kidney problems and/or high blood pressure.

**Table Definitions:**

- AL Action Level.** The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.
- DOH Department of Health.**
- EAL Environmental Action Level.** Environmental Action Levels 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 the EAL does not necessarily indicate that contamination at the site poses environmental hazards but generally warrants additional investigation.
- ISP Incident Specific Parameter.** The Hawaii DOH uses multiple criteria to assess the safety of the drinking water including maximum contaminant levels (MCLs), previously established action levels (ALs), health advisory levels (HALs), and incident specific parameters (ISPs).
- J** Estimated Value
- 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. MCLGs allow for a margin of safety.
- MRDL Maximum Residual Disinfectant Level.** The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.
- MRDLG Maximum Residual Disinfectant Level Goal.** The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contamination.

**Table Abbreviations:**

- n/a** not applicable.
- ppb** parts per billion or micrograms per liter.
- ppt** parts per trillion or nanograms per liter.
- nd** not detectable at testing limits.
- ppm** parts per million or milligrams per liter.

**Table Notes:**

- Only one sample collected.
- The State and EPA require us to monitor for certain contaminants less than once per year because the concentrations of these contaminants are not expected to vary significantly from year to year. The date of the last sample collected is as indicated.
- These results are for informational purposes. There are no set standards. EPA will use this data to help determine where certain contaminants occur and whether it needs to regulate these contaminants. At this time, these contaminants do not have MCLs or MCLGs.
- These are Secondary Maximum Contaminant Levels not enforced by EPA.
- Per the Lead and Copper Rule, results are measured as 90<sup>th</sup> percentile value of samples collected.
- After each quarter, a running average is calculated using the preceding 12 months of data. This value is the highest running average for the year.
- National Secondary Drinking Water Regulations (NSDWRs), or secondary standards, are non-enforceable guidelines regulating contaminants that may cause cosmetic or aesthetic effects in drinking water. EPA recommends secondary standards to water systems but does not require systems to comply with the standard.

**Note:** 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 EPA's Safe Drinking Water Hotline 1-800-426-4791.



# Additional Testing - PFAS

## What are per- and polyfluoroalkyl substances and where do they come from?

Per- and polyfluoroalkyl substances (PFAS) are a group of thousands of man-made chemicals. PFAS have been used in a variety of industrial and consumer products around the globe, including in the U.S., for decades. Due to their widespread use and environmental persistence, most people in the United States have been exposed to certain PFAS. PFAS have been used to make coatings and products that are used as oil and water repellents for carpets, clothing, paper packaging for food, and cookware. They are also contained in some foams (aqueous film-forming foam or AFFF) used for fighting petroleum fires.

## Is there a federal or Hawaii state regulation for PFAS in drinking water?

There is currently no federal drinking water standard for any PFAS compounds. In May 2016, the U.S. Environmental Protection Agency (EPA) established a lifetime drinking water health advisory (HA) level at 70 parts per trillion (ppt) for individual or combined concentrations of perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS). Both chemicals are types of PFAS.

In Hawaii, there is no PFAS drinking water regulation.

The Department of Defense (DoD) issued a policy in 2020 to monitor drinking water for PFAS at all DoD owned and operated water systems at a minimum of every three years. The DoD policy states that if water sampling results confirm that drinking water contains PFOA and PFOS at individual or combined concentrations greater than the 2016 EPA HA level of 70 ppt, water systems would 1) take immediate action to reduce exposure to PFOS or PFOA, to include providing alternative drinking water; and 2) undertake additional sampling to assess the level, scope, and localized source of contamination.

## What about the EPA's 2022 interim Health Advisories or proposed regulations?

EPA issued interim Health Advisories for PFOS and PFOA in 2022. However, these newer levels are below quantifiable limits (i.e., below detection levels). EPA has issued a proposed regulation on PFAS drinking water standards for public comment. DoD looks forward to the clarity that a nationwide regulatory standard for PFOS and PFOA in drinking water will provide.

In anticipation of this EPA drinking water regulation and to account for emerging science that shows potential health effects of PFOS and PFOA at levels lower than 70 ppt, DoD is evaluating its efforts to address PFAS in drinking water, and what actions we can take to be prepared to incorporate this standard, such as reviewing our current data and collecting additional sampling where necessary. DoD remains committed to communicating and engaging with our communities throughout this process.

## Has JBPHH tested its water for PFAS?

Yes. In November 2021, three samples were collected from the Aiea-Halawa Shaft Chlorinator.

We are informing you that PFOA and PFOS were detected, but were below the 2016 EPA HA. Other PFAS compounds covered by the sampling method were detected above the method reporting limit (MRL) but EPA does not have a HA for these compounds at this time. The results are provided in Table 1-7. PFOA and PFOS were below the 2016 EPA HA of 70 parts per trillion, but we will continue to monitor the drinking water. As mentioned previously, the Aiea-Halawa Shaft was temporarily taken offline on December 3, 2021. In accordance with DoD policy, JBPHH will continue to collect samples for PFAS once every three years at Waiawa Shaft as long as the results are below the MRL.

**2021 PFAS Sampling Results at Aiea-Halawa Shaft Chlorinator**

**Table 1-7**

Contaminants (ppt)	MCL (Allowed)	Health Advisory (ppt)	Highest Level Detected	Range of Detection	Year of Sample	Violation
Perfluorooctanoic acid (PFOA)	n/a <sup>2</sup>	70	3.6	nd – 3.6	2021	n/a
Perfluorooctanesulfonic acid (PFOS)	n/a <sup>2</sup>	70	5.6	nd – 5.6	2021	n/a
Perfluorobutanesulfonic acid (PFBS)	n/a <sup>2</sup>	n/a	2.6	nd – 2.6	2021	n/a
Perfluoroheptanoic acid (PFHpA)	n/a <sup>2</sup>	n/a	1.7	nd – 1.7	2021	n/a
Perfluorohexanesulfonic acid (PFHxS)	n/a <sup>2</sup>	n/a	4.6	nd – 4.6	2021	n/a
Perfluorononanoic acid (PFNA)	n/a <sup>2</sup>	n/a	nd	nd	2021	n/a
Perfluorodecanoic acid (PFDA)	n/a <sup>2</sup>	n/a	nd	nd	2021	n/a
Perfluorohexanoic acid (PFHxA)	n/a <sup>2</sup>	n/a	2.9	nd – 2.9	2021	n/a
Perfluorododecanoic acid (PFDoA)	n/a <sup>2</sup>	n/a	nd	nd	2021	n/a
Perfluorotridecanoic acid (PFTTrDA)	n/a <sup>2</sup>	n/a	nd	nd	2021	n/a
Perfluoroundecanoic acid (PFUnA)	n/a <sup>2</sup>	n/a	nd	nd	2021	n/a
N-ethyl perfluorooctanesulfonamidoacetic acid	n/a <sup>2</sup>	n/a	nd	nd	2021	n/a
N-methyl perfluorooctanesulfonamidoacetic acid	n/a <sup>2</sup>	n/a	nd	nd	2021	n/a
Hexafluoropropylene oxide dimer acid (HFPO-DA)	n/a <sup>2</sup>	n/a	nd	nd	2021	n/a
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	n/a <sup>2</sup>	n/a	nd	nd	2021	n/a
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid	n/a <sup>2</sup>	n/a	nd	nd	2021	n/a
11-chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	n/a <sup>2</sup>	n/a	nd	nd	2021	n/a
Perfluorotetradecanoic acid (PFTA)	n/a <sup>2</sup>	n/a	nd	nd	2021	n/a