# Norfolk Naval Shipyard& St Juliens Creek Annex
## Portsmouth, Virginia
## 2022 Consumer Confidence Report

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**For additional information:**

**City of Portsmouth, Water Quality Division (757) 539-2201 x232**

**Virginia Department of Health 757-683-2000 http://www.vdh.virginia.gov/drinking-water/**

**USEPA Safe Drinking Water http://www.epa.gov/safewater/**

**NNSY Public Works Department Environmental 757-641-4370**

*The source of NNSY drinking water includes four surface lakes (Kilby, Meade, Cahoon, and Speight's Run) and five deep wells in the Middle Potomac Aquifer.*

Norfolk Naval Shipyard (NNSY) is committed to providing you drinking water that is safe and reliable. NNSY believes that providing you with accurate information about your water is the best way to assure that it is safe. There were no drinking water violations to report for 2022.

Each year, the Consumer Confidence Report (CCR) is required to be distributed by July 1st of the current year. This CCR is a snapshot of the quality of your drinking water in 2022. The purpose of this annual report is to advise consumers of where their water comes from, provide water quality data, advance greater understanding of drinking water, and heighten awareness to conserve water resources.

## NORFOLK NAVAL SHIPYARD SOURCE WATER

NNSY purchases finished water from the City of Portsmouth. Portsmouth's water supply comes from a system of four surface lakes (Kilby, Meade, Cohoon, and Speight's Run) and five deep wells in the Middle Potomac Aquifer. From these lakes and wells, the water is pumped through pipes to a water treatment facility which has the capacity to treat 33 million gallons of water each day and serves over 120,000 customers in Portsmouth, Chesapeake and Suffolk. Water treatment chemicals are added to the water causing small solid particles to clump together and sink to the bottom of a settling basin. The water is then filtered to remove bacteria, algae, and other impurities. Finally, the water is disinfected with chloramines to kill any remaining bacteria.

## ABOUT DRINKING WATER

The sources of drinking water (both tap 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 and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity. Substances (referred to as contaminants) in source water may come from septic systems, discharges from domestic or industrial wastewater treatment facilities, agricultural and farming activities, urban storm water runoff, residential uses, and many other types of activities. Water from surface sources is treated to make it drinkable while groundwater may or may not have any treatment.

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 may 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 by-products of industrial processes and petroleum production, and may come from gas stations, urban storm water runoff, and septic systems.
***Radioactive contaminants***, which may be naturally occurring, or the result of oil and gas production and mining activities.

In addition to these contaminants, all lakes and streams contain algae, which are microscopic plants that can cause taste and odor problems in drinking water.

## ABOUT DRINKING WATER (continued)

All 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 at https://www.epa.gov/ground-water-and-drinking-water/national-primary-drinking-water-regulations.

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. The Food and Drug Administration (FDA) establishes limits for contaminants in bottled water, which must provide the same protection for public health.

***Who needs to take special precautions?***

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as those with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune systems 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/Centers for Disease Control (CDC) guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available at https://www.epa.gov/ground-water-and-drinking-water/national-primary-drinking-water-regulations.

Kidney dialysis patients should consult with their health care providers or dialysis centers in order to take special precautions when using chloraminated water. Fish owners should be sure chloramines are removed from the water before it is used in aquariums or ponds. Many pet stores sell water conditioners for chloraminated water.

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. The primary source of Lead in drinking water is materials and components associated with service lines and home plumbing. NNSY is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components in buildings. 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 or until it becomes cold or reaches a steady temperature before using water for drinking or cooking. If you have questions about your water, please contact NNSY Environmental at 757-641-4370. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline (800-426-4791) or at http://www.epa.gov/safewater/lead.

## DEFINITIONS AND ABBREVIATIONS

Contaminants in your drinking water are routinely monitored according to Federal and State regulations. The table on the following pages shows the results of monitoring for 2020. In the tables and elsewhere in this report you may find many terms and abbreviations which you are not familiar. The following definitions are provided to help you better understand these terms:

- **Action Level (AL)** - The concentration of a contaminant that, if exceeded, triggers treatment or other requirements which a water system must follow. For lead and copper monitoring, compliance is based on the 90th percentile value.
- **Level 1 Assessment** – A Level 1 assessment is a study of the waterworks to identify potential problems and determine, if possible, why total coliform bacteria have been found in our waterworks.
- **Level 2 Assessment** – A level 2 assessment is a very detailed study of the waterworks to identify potential problems and determine, if possible, why an *E. Coli* PMCL violation has occurred and why total coliform bacteria have been found in our waterworks on multiple occasions.
- **Maximum Contaminant Level (MCL)** - The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to 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 allow for a margin of safety.
- **Maximum Residual Disinfectant Level (MRDL) -** The highest level of a disinfectant allowed in drinking water based on running annual average. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants. For chlorine and chloramines, a waterworks is in compliance with the MRDL when the running annual average of monthly averages of samples taken in the distribution system, computed quarterly, is less than or equal to the MRDL.
- **Maximum Residual Disinfectant Level Goal (MRDLG) -** 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.
- **Minimum Reporting Limit (MRL)- The smallest measured concentration of a substance that can be reliably measured by using a given analytical method.**
- **NA** – Not applicable
- **Nephelometric Turbidity Unit (NTU)** – A measure of the clarity, or cloudiness, of water. Turbidity in excess of 5 NTU is just noticeable to the average person. Turbidity is monitored because it is a good indicator of the effectiveness of the filtration system.
- **Non-detection (ND)** – Laboratory analysis indicates that the contaminant is not present.
- **Picocuries per liter (pCi/L)** - A measure of the radioactivity in water.
- **Parts per million (ppm) or Milligrams per liter (mg/L)** – A measurement of the amount of contaminant per unit of water. A part per million is one cent in $10,000 or one minute in two years.
- **Parts per billion (ppb) or Micrograms per liter (ug/L)** – A measurement of the amount of contaminant per unit of water. A part per billion is like one cent in $10,000,000 or one minute in 2,000 years.
- **Secondary Maximum Contaminant Level (SMCL)** – Non-enforceable standard that is established for aesthetic considerations
- **Treatment Technique (TT)** - A required process intended to reduce the level of a contaminant in drinking water.

## WATER QUALITY DATA

The tables below list only those contaminants that were present in your drinking water at levels detectable by laboratory equipment. Unless otherwise noted, the data presented in these tables is from testing done in 2021. We are required to monitor for certain contaminants less than once per year because the concentrations of these contaminants do not change. The presence of contaminants in the water does not necessarily indicate that the water poses a health risk. The EPA sets the Maximum Contaminant Levels (MCLs) and the Maximum Contaminant Level Goals (MCLGs) as listed in the tables. The Regulated Substances Table and the Unregulated Substances Table are provided for your information and as required by the Consumer Confidence Rule.

### Table 1. 2022 WATER QUALITY TABLE-City of Portsmouth (Water treatment Plant Samples)

| Regulated Substances | Unit | MCLG | MCL | Amount Detected | Range | Meets EPA Standards | Possible Source of Contamination |
|---|---|---|---|---|---|---|---|
| Barium | ppm | 2 | 2 | 0.025 | NA | Yes | Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits |
| Chloramines | ppm | 4 | 4 | 3.6 | 1.5-4.0 | Yes | Water additive used to control microbes |
| Fluoride | ppm | 4 | 4 | 0.82 | 0.72-0.88 | Yes | Erosion of natural deposits; Water additive which promotes strong teeth; Discharge from fertilizer and aluminum factories |
| Total Organic Carbon | ppm | NA | TT | 1.93 | 1.34-2.63 | Yes | Naturally present in the environment |
| **Radiological Data** | **Unit** | **MCLG** | **MCL** | **Amount Detected** | **Range** | **Meets EPA Standards** | **Notes and Possible Source of Contamination** |
| Alpha Emitters[1] | pCi/L | 0 | 15 | -0.36+/-0.65 | NA | Yes | Erosion of natural deposits |
| Beta/Photon Emitters[2] | pCi/L | 0 | 50 | 1.4+/-1.3 | NA | Yes | Decay of natural and man-made deposits |
| Combined Radium[3] | pCi/L | 0 | 5 | 1.6+/-0.73 | NA | Yes | Erosion of natural deposits based on local geological bed rock. |
| **Turbidity** | **Unit** | **MCLG** | **MCL** | **Amount Detected** | **Range** | **Meets EPA Standards** | **Possible Source of Contamination** |
| Turbidity | NTU | NA | TT | 0.05 | 0.02-0.06 | Yes | Soil Runoff |
| Turbidity (Lowest monthly percent of samples meeting limit) | NTU | NA | TT | 100 | NA | Yes | Urban and soil runoff, sediments from erosion |

1 Footnote for City of Portsmouth: Gross Alpha MRL=3.0 results fell in range of 1.5-/+ 1.2 pCi/L with a minimum detectable activity(MDA95) of 1.1 pCi/L. Meaning the concentration can be counted with a precision of plus or minus 100% at the 95% confidence level.
2 Footnote for City of Portsmouth: Gross Beta MRL=4.0 results fell in range of 0.69 +/- 1.83 with a minimum detectable activity(MDA95) of 1.9 pCi/L. Meaning the concentration can be counted with a precision of plus or minus 100% at the 95% confidence level.
3 Footnote for City of Portsmouth: Combined Radium MRL=0.56 results fell in range of 0.57 +/- 0.56 with a minimum detectable activity(MDA95) of 0.45 pCi/L. Meaning the concentration can be counted with a precision of plus or minus 100% at the 95% confidence level. Radium-226 MRL =1.0 with a MDA =0.45pCi/L with range of 0.47 +/-0.41pCi/L, Radium-228 MRL =1.0 with a MDA=0.56 pCi/L with range of 1.2+/- 0.6

| Secondary and Unregulated Monitored Substances | Unit | SMCL | Amount Detected | Range | Likely Source |
|---|---|---|---|---|---|
| Aluminum | ppb | 200 | 4.7 | 0-23 | Erosion of natural deposits; residual from surface water treatment processes |
| Chloride | ppm | 250 | 20 | NA | Runoff/leaching from natural deposits |
| Sulfate | ppm | 250 | 69 | 52-90 | Runoff/leaching from natural deposits; Industrial wastes |
| Total Dissolved Solids (TDS) | ppm | 500 | 220 | 214-273 | Runoff/leaching from natural deposits |
| pH (acidity) | pH units | 6.5-8.5 | 7.6 | 7.5-7.7 | Naturally occurring |
| Sodium[1] | ppm | NA[4] | 70 | 67-83 | Natural in environment; also from use of chemicals at water treatment plant |

[1] For physician-prescribed "no salt diets" a limit of 20 ppm is suggested.

| Other Regulated Substances | Unit | Amount Detected | Range | Typical Source |
|---|---|---|---|---|
| Alkalinity | ppm | 84 | 71-93 | Naturally Occurring |
| Calcium Hardness | ppm | 21 | 16-27 | Naturally present in sedimentary rock. |
| Calcium | ppm | 8 | 6-10 | NA |
| Conductivity | umhos/cm | 369 | 320-407 | Naturally Occurring |
| Corrosion Index | Corrosivity units | -1.13 | -1.67- -0.14 | Naturally or industrially-influenced balance of hydrogen, carbon, and oxygen in the water; Affected by temperature and other factors |
| Hardness | ppm | 25 | 20-30 | NA |
| Orthophosphate | ppm | 0.11 | 0.09-0.17 | Naturally occurring in rocks and other materials |
| Magnesium | ppm | 4 | 0-10 | N/A |
| *The substances listed above are not regulated by the EPA; however, this information is provided as a service to our customers. | | | | |

**Table 2. 2022 Water Quality Table- Norfolk Naval Shipyard (Distribution Sysytem Samples)**

| Lead and Copper Monitoring* | Unit | MCLG | AL | Samples above AL | Amount Detected (90th Percentile) | Range | Meets EPA Standards | Possible Source of Contamination |
|---|---|---|---|---|---|---|---|---|
| Lead (2021 data) | ppb | 0 | 15 | **2** | 1 | ND-409 | Yes | Corrosion of household plumbing systems; Erosion of natural deposits |
| Copper (2021 data) | ppm | 1.3 | 1.3 | 0 | 0.299 | 0.024 – 0.931 | Yes | Corrosion of galvanized pipes; Erosion of natural deposits |
| **Residual Disinfectants & Disinfection By Products** | **Unit** | **MCLG** | **MCL** | | **Highest Level** | **Range** | **Meets EPA Standards** | **Possible Source of Contamination** |
| Haloacetic Acids (HAA5) | ppb | NA | 60 | | 22.00[1] | 0-27 | Yes | Drinking water disinfectant by-product |
| Trihalomethanes (TTHM) | ppb | NA | 80 | | 38.4[1] | 26.1-52.9 | Yes | Drinking water disinfectant by-product |
| Total Chlorine Residual | ppm | 4[2] | 4[3] | | 1.5[4] | 0 –4.5 | Yes | Drinking water disinfectant |

[1]The highest levels found for TTHM and HAA5 were the highest running annual averages found at each of the sample sites for each of the four quarters in 2022. The range is the highest and the lowest values found in the individual samples. The range is the highest and lowest values found in the individual samples.; [2]MRDLG; [3] MRDL, [4] This number is the highest running annual average of quarterly compliance samples for the 2022 calendar year; for Total Chlorine Residual, the highest running annual average was determined by calculating quarterly values which were based on monthly compliance samples.

| UCMR4 (2019 data) | Unit | Amount Detected | Range Low-High | Typical Source |
|---|---|---|---|---|
| HAA5 | ppb | 16.87 | 0.715 – 41.9 | By-product of drinking water disinfection |
| HAA6Br | ppb | 5.06 | 0-10.89 | By-product of drinking water disinfection |
| HAA9 | ppb | 21.89 | 0.715 – 51.237 | By-product of drinking water disinfection |
| Manganese | ppb | 4.1 | 0.855 -13.0 | Naturally Occurring |
| *This monitoring provides a basis for future regulatory actions to protect public health. One other metal, three alcohols, three other semivolatile chemicals, ten cyanotoxin chemicals, and eight pesticides and one pesticide manufacturing byproduct were also monitored, but these contaminants detected levels were less than their USEPA's set Minimum Reporting Levels (MRL). The MRL is used to provide the smallest measured concentration of contaminant that may be reliably reported by the lab using a given analytical method. | | | | |

## Table 3. 2022 WATER QUALITY TABLE - ST. JULIENS CREEK ANNEX *(Distribution System Samples)*

| Lead and Copper Monitoring | Unit | MCLG | AL | Samples above AL | Amount Detected (90th Percentile) | Range | Meets EPA Standards | Possible Source of Contamination |
|---|---|---|---|---|---|---|---|---|
| Lead (2021 data) | ppb | 0 | 15 | 0 | 2[2] | ND – 2 | Yes | Corrosion of household plumbing systems; Erosion of natural deposits |
| Copper (2021 data) | ppm | 1.3 | 1.3 | 0 | 0.290[2] | 0.062 – 0.324 | Yes | Corrosion of galvanized pipes; Erosion of natural deposits |

| Residual Disinfectants and Disinfection By Products | Unit | MCLG | MCL | Highest Level | Range (Individual Results) | Meets EPA Standards | Possible Source of Contamination |
|---|---|---|---|---|---|---|---|
| Haloacetic Acids (HAA5) | ppb | NA | 60 | 8.00[1] | 6-12 | Yes | Drinking water disinfectant by-product |
| Trihalomethanes (TTHM) | ppb | NA | 80 | 40.7[2] | 31.9-48.1 | Yes | Drinking water disinfectant by-product |
| Total Chlorine Residual | ppm | 4[6] | 4[3] | 0.5[4] | 0-2.2 | Yes | Drinking water disinfectant |

[1] The highest levels found for TTHM and HAA5 were the highest running annual averages found at each of the sample sites for each of the four quarters in 2022. The range is the highest and the lowest values found in the individual samples. The range is the highest and lowest values found in the individual samples; [2] MRDLG; [3] MRDL, [4] This number is the highest running annual average of quarterly compliance samples for the 2022 calendar year; for Total Chlorine Residual, the highest running annual average was determined by calculating quarterly values which were based on monthly compliance samples.

**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 industries and consumer products around the globe, including in the United States, since the 1940s. 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 at airfields and in industrial fire suppression processes because they rapidly extinguish fires, saving lives and protecting property. PFAS chemicals are persistent in the environment and some are persistent in the human body – meaning they do not break down and they can accumulate over time.

**Is there a regulation for PFAS in drinking water?**

There is currently no established federal water quality regulation for any PFAS compounds. In May 2016, the EPA established a 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.

Out of an abundance of caution for your safety, the Department of Defense's (DoD) PFAS testing and response actions go beyond EPA Safe Drinking Water Act requirements.

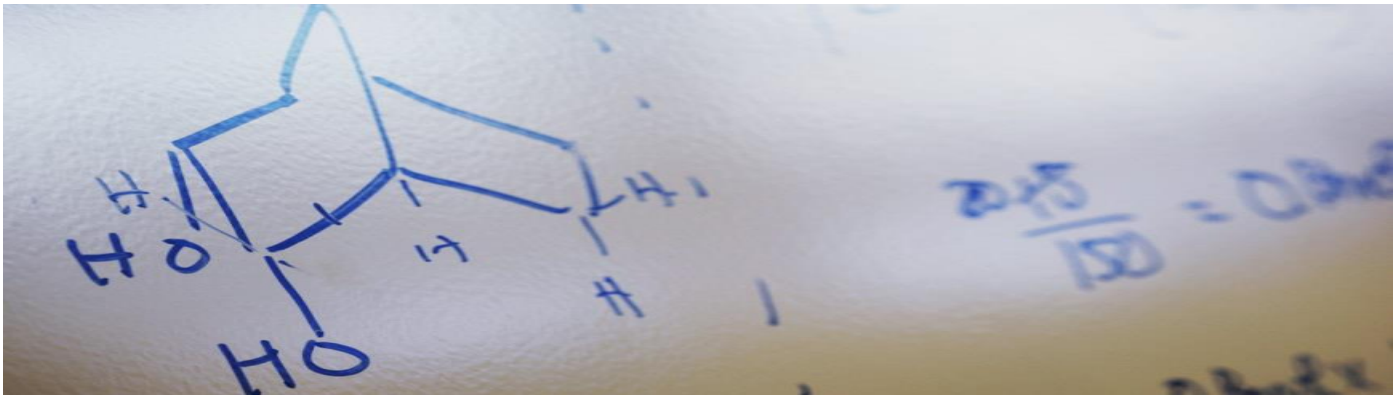
The EPA's health advisory states that if water sampling results confirm that drinking water contains PFOA and PFOS at individual or combined concentrations greater than 70 parts per trillion, water systems should quickly undertake additional sampling to assess the level, scope, and localized source of contamination to inform next steps.

**Has Norfolk Naval Shipyard/St Julien's Creek Annex tested its water for PFAS?**

Yes, In June 2019 the City of Portsmouth samples were collected from Deep Wells 1 and 2.

We are pleased to report that drinking water testing results were below the Method Reporting Limit (MRL) for all 18 PFAS compounds covered by the sampling method, including PFOA and PFOS. This means that PFAS were not detected in your water system.

https://www.cnic.navy.mil/om/base_support/environmental/water_quality/Testing_for_Perfluorochemicals.html



## VIOLATIONS AND EXCEEDANCES

There were no drinking water violations to report for 2022 for NNSY and St Julien's Creek Annex.

**QUESTIONS?** Please contact PWD NNSY Environmental staff at 757-641-4370 if you have any questions regarding this report. To access this report electronically, please visit the Commander, Navy Region Mid-Atlantic website at: http://www.cnic.navy.mil/regions/cnrma/om/environmental_support/water_quality_information.html