

CITY OF FULLERTON

2025 REPORT ON THE CITY'S WATER QUALITY RELATIVE TO "PUBLIC HEALTH GOALS AND MAXIMUM CONTAMINANT LEVEL GOALS"

Public Health Goals - Background:

Provisions of the California Health and Safety Code Section 116470(b) specify that larger (>10,000 service connections) water utilities prepare a special report by July 1, 2025 if their water quality measurements have exceeded any Public Health Goals (PHGs). PHGs are non-enforceable goals established by the Cal-EPA's Office of Environmental Health Hazard Assessment (OEHHA). The law also requires that where OEHHA has not adopted a PHG for a constituent, the water suppliers are to use the Maximum Contaminant Level Goals (MCLGs) adopted by Federal Environmental Protection Agency (USEPA). Only constituents which have a California primary drinking water standard and for which either a PHG or MCLG has been set are to be addressed.

If a constituent was detected in the City's water supply between 2022 and 2024 at a level exceeding an applicable PHG or MCLG, this report provides the information required by the law. Included is the numerical public health risk associated with the MCL and the PHG or MCLG, the category or type of risk to health that could be associated with each constituent, the best treatment technology available that could be used to reduce the constituent level, and an estimate of the cost to install that treatment if it is appropriate and feasible.

What are PHGs and MCLGs?

PHGs are set by the California Office of OEHHA which is part of Cal-EPA and are based solely on public health risk considerations. None of the practical risk-management factors that are considered by the USEPA or the State Water Resources Control Board-Division of Drinking Water (SWRCB-DDW) in setting drinking water standards (MCLs) are considered in setting the PHGs. These factors include analytical detection capability, treatment technology available, benefits and costs. The PHGs are not enforceable and are not required to be met by any public water system. MCLGs are the federal equivalent to PHGs.

Water Quality Data Considered:

All of the water quality data collected by our water system between 2022 and 2024 for purposes of determining compliance with drinking water standards was considered. This data was all summarized in our 2022, 2023 and 2024 Annual Water Quality Reports, also known as the Consumer Confidence Report available on the City's website. If requested by the customer, a hard copy is mailed out to the residence.

Guidelines Followed:

The Association of California Water Agencies (ACWA) formed a workgroup which prepared guidelines for water utilities to use in preparing these newly required reports. The ACWA guidelines were used in the preparation of our report.

Best Available Treatment Technology and Cost Estimates:

Both the USEPA and State Water Resources Control Board–Division of Drinking Water (SWRCB-DDW) adopt what are known as BATs or Best Available Technologies which are the best known methods of reducing contaminant levels to the MCL. Costs can be estimated for such technologies. However, since many PHGs and all MCLGs are set much lower than the MCL, it is not always possible or feasible to determine what treatment is needed to further reduce a constituent downward to or near the PHG or MCLG, many of which are set at zero. Estimating the costs to reduce a constituent to zero is difficult, if not impossible because it is not possible to verify by analytical means that the level has been lowered to zero. In some cases, installing treatment to try and further reduce very low levels of one constituent may have adverse effects on other aspects of water quality.

Constituents Detected that Exceed a PHG or a MCLG:

The following is a discussion of constituents that were detected in one or more of our drinking water sources at levels above the PHG, or if no PHG exists, above the MCLG.

Coliform Bacteria:

During 2022, 2023, and 2024, the City collected over 4,700 samples from our distribution system for coliform analysis. Occasionally, a sample was found to be positive for coliform bacteria but check samples were negative and follow up actions were taken. A maximum of 0.8% of these samples were positive in any month.

The MCL for coliform is 5% positive samples of all samples per month and the MCLG is zero. The reason for the coliform drinking water standard is to minimize the possibility of the water containing pathogens which are organisms that cause waterborne disease. Because coliform is only a surrogate indicator of the potential presence of pathogens, it is not possible to state a specific numerical health risk. While USEPA normally sets MCLGs “at a level where no known or anticipated adverse effects on persons would occur”, they indicate that they cannot do so with coliforms.

Coliform bacteria are an indicator organism that are ubiquitous in nature and are not generally considered harmful. They are used because of the ease in monitoring and analysis. If a positive sample is found, it indicates a potential problem that needs to be investigated and follow up sampling done. It is not at all unusual for a system to have an occasional positive sample. It is difficult, if not impossible, to assure that a system will never get a positive sample.

The City adds chlorine at our groundwater sources to assure that the water served is microbiologically safe. The chlorine residual levels are carefully controlled to provide the best health protection without causing the water to have undesirable taste and odor or increasing the disinfection byproduct level. This careful balance of treatment processes is essential to continue supplying our customers with safe drinking water.

Other equally important measures that we have implemented include: an effective cross-connection control program, maintenance of a disinfectant residual throughout our system, an

effective monitoring and surveillance program and maintaining positive pressures in our distribution system. Our system has already taken all of the steps described by SWRCB-DDW as “best available technology” for coliform bacteria in Section 64447, Title 22, CCR.

Tetrachloroethylene (PCE):

The PHG for PCE is 0.06 ppb and the MCL or drinking water standard for PCE is 5 ppb. The City of Fullerton conducted monitoring of PCE in water samples collected from each of the City’s eight active wells. Based on analytical results obtained, PCE was detected above the established PHG of 0.06 ppb in Well 5 and Well 8 at Main Plant but was not detected above the MCL at any time. The range of detections for PCE was 0.9 to 1.9 ppb.

The category of health risk (carcinogenic) associated with PCE, and the reason that a drinking water standard was adopted for it, is that people who drink water containing PCE above the MCL throughout their lifetime could experience an increased risk of developing cancer. SWRCB-DDW says that “Drinking water which meets this standard (the MCL) is associated with little to none of this risk and should be considered safe with respect to PCE.”

The numerical health risk at the MCL of 5 ppb is 8×10^{-5} , or eight excess cancer cases per 100,000 population. The numerical health risk at the PHG of 0.06 ppb is 1×10^{-6} or one excess cancer case per one million population.

The BAT for PCE to lower the level below the PHG is either Granular Activated Carbon (GAC) or Packed Tower Aeration (PTA). Since the PCE level in these wells is already below the MCL, GAC with a long empty bed contact time (EBCT) would likely be required to attempt to lower the PCE level below the PHG of 0.06 ppb. The estimated cost to install and operate such a treatment system at our Main Plant would be approximately range from \$847,366.82 to \$1,603,478.80 per year, includes annualized capital and O&M costs. This would result in an increased cost of \$26.69 to \$50.50 per customer per year.

A GAC treatment plant is currently online to treat Perfluorooctanoic Acid (PFOA) and Perfluorooctanesulfonic Acid (PFOS) at the Main Plant. GAC was chosen as opposed to Ion Exchange because of the benefits of removing PCE as well as Per- and Polyfluoroalkyl Substances (PFAS). The City is currently working to expand the existing treatment plant to include the wells affected by both PFAS and PCE, with construction anticipated to be completed in 2026/2027.

Uranium:

The PHG for Uranium is 0.43 Pico Curies per Liter (pCi/L) and the MCL or drinking water standard for Uranium is 20 pCi/L. The City of Fullerton conducted monitoring of Uranium in water samples collected from each of the City’s eight active wells. Based on analytical results obtained, Uranium was detected above the established PHG of 0.43 pCi/L in five wells but was not detected above the MCL at any time. The range of detections for Uranium was between 1.29 and 7.33 pCi/L.

Uranium is considered a naturally occurring contaminant in some groundwater and surface water supplies. Uranium occurs as a trace element in many types of rocks. Because its

abundance on geological formations varies from place to place, uranium is a highly variable source of contamination in drinking water.

The category of health risk (carcinogenic) associated with Uranium and the reason that a drinking water standard was adopted for it is that people who drink water containing Uranium above the MCL throughout their lifetime could experience an increased risk of getting cancer and kidney toxicity. SWRCB-DDW says that “Drinking water which meets this standard (the MCL) is associated with little to none of this risk and should be considered safe with respect to Uranium.”

The numerical health risk at the MCL of 20 pCi/L is 5×10^{-5} , or five excess cancer cases per 100,000 population. The numerical health risk at the PHG of 0.43 pCi/L is 1×10^{-6} or one excess cancer case per one million population.

The BAT to lower the level of Uranium is Ion Exchange/Water Softening treatment. Since the level of Uranium in each of the City wells is already below the MCL, the Ion Exchanged/Lime Softening treatment method would be used to attempt to lower the Uranium level below the PHG of 0.43 pCi/L. The estimated cost to install and operate such a treatment system at our Main Plant would be approximately \$2,211,617.27 per year, includes annualized capital and O&M costs. This would result in an increased cost of \$69.66 per customer per year.

Perchlorate

The PHG for Perchlorate is 1.0 ppb and the MCL or drinking water standard for Perchlorate is 6.0 ppb. The City of Fullerton conducted monitoring of Perchlorate in water samples collected from each of the City's eight active wells. Based on analytical results obtained, Perchlorate was detected above the established PHG of 1.0 ppb in the Christlieb 15A and Airport 9 Well but was not detected above the MCL at any time. The range of detections for Perchlorate was between <1 and 2.5 ppb.

Perchlorates are used in propellants for rocket, pyrotechnics, flares, and matches. Perchlorates are not carcinogens; they can however limit the intake of iodine which can affect the production of hormones that regulate body functions and can lead to developmental delays. Prolonged exposure to perchlorates may lead to potential issues with thyroid activity.

The BAT for Perchlorate to lower the level below the PHG is Ion Exchange. The estimated cost to install and operate such a treatment system at Christlieb 15A and Airport Well 9 would be approximately \$2,611,818.09 per year, includes annualized capital and O&M costs. This would result in an increased cost of \$82.26 per customer per year.

Arsenic

The PHG for Arsenic is 0.004 ppb and the MCL or drinking water standard for Arsenic is 10 ppb. The City of Fullerton conducted monitoring of Arsenic in water samples collected from each of the City's eight active wells. Based on analytical results obtained, Arsenic was detected above the established PHG of 0.004 ppb in the Main Plant 3A Well but was not detected above the MCL at any time. The range of detection for Arsenic was <2.0 to 7.4 ppb.

The numerical health risk at the MCL of 10 ppb is 1×10^{-6} , or 2.5 excess cancer cases per 1,000 population. The numerical health risk at the PHG of 0.004 ppb is 1×10^{-6} or one excess cancer case per one million population.

One of the BAT for Arsenic to lower the level below the PHG is Ion Exchange. The estimated cost to install and operate such a treatment system at Main Plant 3A would be approximately \$2,107,629.72 per year, includes annualized capital and O&M costs. This would result in an increased cost of \$66.38 per customer per year.

Main Plant 3A Well also had high levels of PFOA. In May 2024, an Granular Activated Carbon (GAC) treatment plant was brought online to treat PFOA. As a BAT for Arsenic, the treatment plant will effectively remove some Arsenic as well without adding additional cost to customers.

Perfluorooctanoic Acid (PFOA)

The PHG for Perfluorooctanoic Acid (PFOA) is 0.007 ng/L. A federal MCL or drinking water standard for PFOA was adopted in April of 2024 and is set to go in effect in April 2029, with a MCL set at 4 ng/L. The City of Fullerton conducted monitoring of PFOA in water samples collected from each of the City's eight active wells. Based on analytical results obtained, PFOA was detected above the established PHG of 0.007 ng/L. The range of detection for PFOA was 5 to 15.1 ng/L.

PFOA (perfluorooctanoic acid) is a synthetic chemical used in the manufacture of non-stick coatings, waterproof fabrics, and firefighting foams. PFOA is not classified as a carcinogen by all agencies, but it has been linked to potential health effects such as liver damage, immune system disruption, and developmental issues. Long-term exposure to PFOA may lead to increased risks of kidney and testicular cancers and may interfere with hormone function.

The numerical health risk at the PHG of 0.004 ppb is 1×10^{-6} or one excess cancer case per one million population.

The BAT to lower PFOA levels below the PHG is Ion Exchange or Granular Activated Carbon (GAC). The estimated cost to install and operate such a treatment system at Sunclipse 10, Kimberly 1A and 2, Main Plant Wells 3A, 5, 6, and 8, would be approximately \$4,821,415.00 to \$13,396,473.00 per year, includes annualized capital and O&M costs. This would result in an increased cost of \$151.86 to \$421.95 per customer per year.

Main Plant 3A Well and Kimberly 1A currently have an Ion exchange and Granular Activated Carbon Treatment plant in operation that remove PFOA to below the future MCL level. Future plans to develop other treatment plants for affected wells are expected to be Inservice in 2026/2027.

Perfluorooctanoic Sulfonic Acid (PFOS)

The PHG for Perfluorooctanoic Sulfonic Acid (PFOS) is 1 ng/L. A federal MCL or drinking water standard for PFOS was adopted in April of 2024 and is set to go into effect in April 2029, with a MCL of 4 ng/L. The City of Fullerton conducted monitoring of PFOS in water samples collected from each of the City's eight active wells. Based on analytical results

obtained, PFOS was detected above the established PHG of 1 ng/L in the Main Plant 3A Well. The detection range for PFOS was 7.1 to 34.9 ng/L.

PFOS (perfluorooctane sulfonate) is a man-made chemical formerly used in stain repellents, firefighting foams, and various industrial applications. Although no longer produced in many countries, PFOS persists in the environment and can accumulate in living organisms. It is not officially classified as a carcinogen, but prolonged exposure has been associated with liver damage, immune system effects, and developmental problems. PFOS may also disrupt hormone function and has been linked to changes in cholesterol levels

The numerical health risk at the PHG of 0.004 ppb is 1×10^{-6} or one excess cancer case per one million population.

The BAT for PFOS to lower the level below the PHG is Ion Exchange or Granular Activated Carbon (GAC). The estimated cost to install and operate such a treatment system at Sunclipse 10, Kimberly 1A and 2, Main Plant Wells 3A, 5, 6, and 8, would be approximately \$4,821,415.00 to \$13,396,473.00 per year, includes annualized capital and O&M costs. This would result in an increased cost of \$151.86 to \$421.95 per customer per year.

Main Plant 3A Well and Kimberly 1A currently have an Ion exchange and Granular Activated Carbon Treatment plant in operation that remove PFOS to below the future MCL level. Future plans to develop other treatment plants for affected wells are expected to be Inservice in 2026/2027.

Recommendations For Further Action:

The drinking water quality of the City's water system meets all USEPA and SWRCB-DDW drinking water standards set to protect public health. To further reduce the levels of the constituents identified in this report that are already significantly below the health-based Maximum Contaminant Levels established to provide "safe drinking water", additional costly treatment processes would be required. The effectiveness of the treatment processes to provide any significant reductions in constituent levels at these already low values is uncertain. The health protection benefits of these further hypothetical reductions are not at all clear and may not be quantifiable.

In addition to the Kimberly 1A PFAS Treatment Plant and the Main Plant 3A Treatment Plant, Fullerton is planning additional PFAS treatment facilities for the affected wells. The Kimberly 1A Treatment Plant uses ion exchange, a Best Available Technology (BAT) for removing uranium and arsenic. The Main Plant Well Treatment Plant uses granular activated carbon (GAC), an approved BAT for removing PCE.

Therefore, no action is proposed.