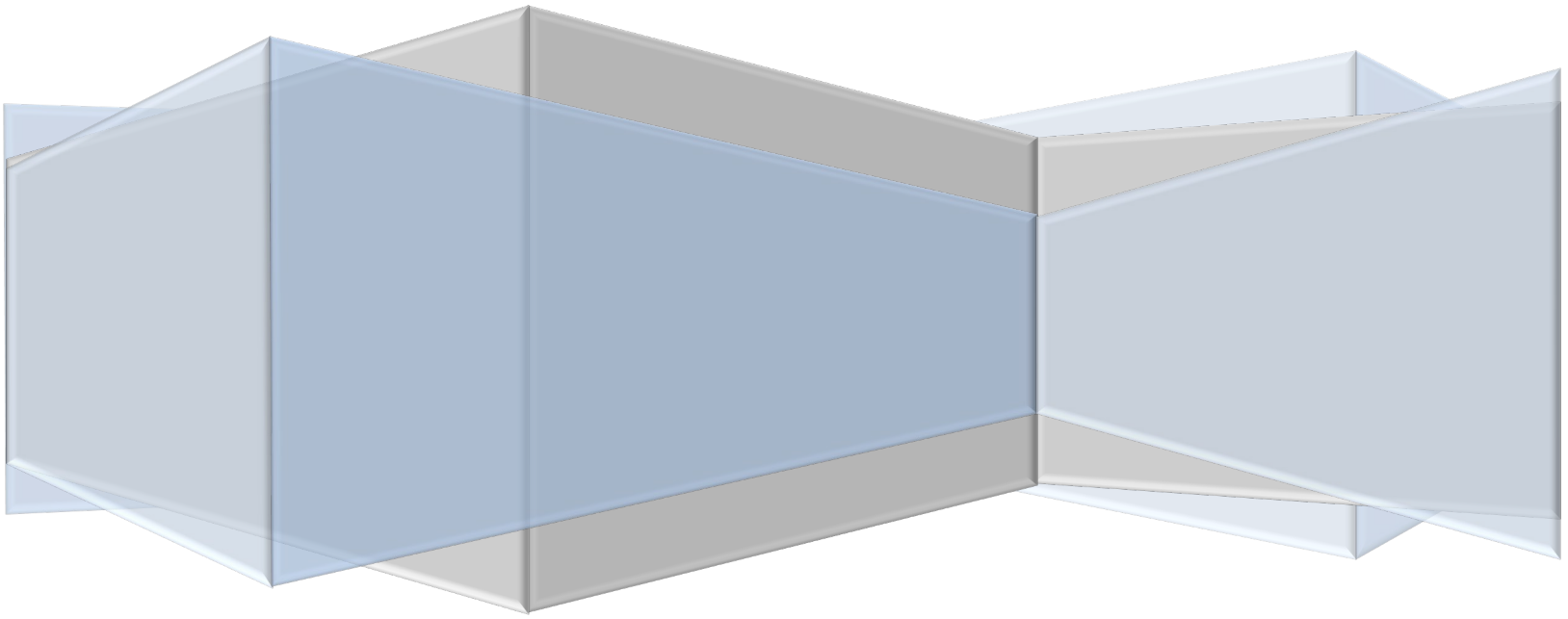
City of Ceres

2025 Public Health Goals Report

Prepared by Water Quality Staff



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Background

The California Health and Safety Code Title 22 Section 116470 (b) specifies that water utilities serving more than 10,000 connections prepare a brief written report every three years that documents detections of any constituents that exceed a Public Health Goal (PHG) in the preceding three years. This report documents the drinking water contaminants in our water supply found to be above a PHG, or if no PHG, above the Maximum Contaminant Level Goal (MCLG) during calendar years 2022 through 2024.

State law requires the following information to be disclosed in this report:

- Numerical public health risk
- Category or type of health risk
- Best Available Treatment (BAT) technology
- Estimated treatment costs

What are Public Health Goals?

PHG's and MCLG's are non-enforceable goals set by the OEHHA and the USEPA. PHG's are set based solely on public health risk considerations. PHG's are often not practically achievable from an economic and technological point of view. None of the practical risk-management factors that are considered by the USEPA or the California Division of Drinking Water (DDW) in setting drinking water standards for Maximum Contaminant Level's (MCL's) are considered in setting the PHG's. These factors include analytical detection capability, treatment technology availability and costs. However, both the PHG's and MCLG's are useful tools for regulators when determining enforceable standards such as MCL's, which water suppliers are required to meet.

Water Quality Data Considered

All of the water quality data collected by the City between 2022 and 2024 for the purpose of determining compliance with drinking water standards was reviewed for the 2025 Public Health Goals report. This data was summarized in the 2022, 2023, and 2024 Annual Consumer Confidence Reports which is accessible by visiting the City's website at https://www.ceres.gov/169/City-of-Ceres-Water-System-Historical-In or by calling the Public Works Office at (209) 538-5732 and requesting a copy.

Guidelines Followed

The Association of California Water Agencies (ACWA) formed a workgroup which prepared guidelines for water utilities to use in preparing these reports set by the OEHHA. The ACWA guidelines from 2022 were utilized in the preparation of this report.

Best Available Treatment Technology and Cost Estimates

Both the USEPA and DDW adopt what are known as Best Available Technologies (BAT's), which are the best-known methods of reducing contaminant levels to the MCL. Costs can be estimated for such technologies. However, since many PHG's and all MCLG's 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 the calendar years from the City's drinking water source at levels above the PHG, or the MCLG. Many contaminants are considered to be carcinogenic and the USEPA's policy is to set the applicable MCLG's at zero because they consider no amount of these contaminants to be without risk. It is understood by all that zero is an unattainable goal and cannot be measured by the practically available analytical methods. Note that by regulation, OEHHA cannot set a PHG at zero and must calculate a numerical level to address risk, even though it may be unattainable or impossible to measure.

Chemical	Units	MCL	PHG	Result	Sample Date
Arsenic	mg/L	0.01	0.000004	0.008	2024
Beryllium	mg/L	0.004	0.001	0.0015	2023
Cadmium	mg/L	0.005	0.00004	0.003	2023
Dibromoacetic Acid	mg/L	0.06	0.00003	0.0012	2023
PFOA	ng/L	4.0	0.007	4.2	2023
PFOS	ng/L	4.0	1.0	18.0	2023
Radium 226	pCi/L	5.0	0.05	0.313	2022
Radium 228	pCi/L	5.0	0.019	0.277	2022
TCP	ug/L	0.005	0.0000007	0.0052	2023
PCE	ug/L	5.0	0.06	2.26	2023*
Bromodichloromethane	mg/L	0.08	0.00006	.00577	2024
Bromoform	mg/L	0.08	0.0005	.00578	2024
Chloroform	mg/L	0.08	0.0004	.00986	2024
Dibromochloromethane	mg/L	0.08	0.0001	.00364	2024
Uranium	pCi/L	20.0	0.43	9.42	2022
1,2-Dichloroethane	mg/L	0.005	0.0004	.00657	2023*

Milligrams per liter (mg/L).
Nanograms per liter (ng/L).
Picocuries per liter (pCi/L).
Micrograms per liter (ug/L).
*Source is now offline

Arsenic

Arsenic is a naturally occurring element in the earth's crust and is very widely distributed in the environment. High levels of arsenic tend to be found more in groundwater sources than in surface water sources. The demand on groundwater from municipal systems and private drinking water wells may cause water levels to drop and release arsenic from rock formations. Other sources of contamination in drinking water include erosion of natural deposits, runoff from orchards, and runoff from glass and electronics production waste. All humans are exposed to microgram quantities of arsenic (inorganic and organic) largely from food and to a lesser degree from drinking water and air.

The MCL for arsenic is 0.01 mg/L (milligrams per liter), with a PHG of 0.000004 mg/L. The City has detected arsenic in exceedance of the PHG at several wells. The OEHHA has determined that arsenic is a health concern at certain levels of exposure and listed the health risk category as carcinogenicity. The numerical health risk for arsenic above the PHG is $1x10^{-6}$ which means one excess cancer case per million people exposed.

Both the USEPA and the DDW list the BATs for removing arsenic to below the MCL as activated alumina, ion exchange, lime softening, coagulation/filtration, electrodialysis, oxidation/filtration and reverse osmosis (RO). The most effective method to consistently remove arsenic to below the MCL is to install RO. The City has treatment installed at one (1) well at the point of entry to the distribution system to reduce arsenic levels; however, this well is now inactive.

Beryllium

Beryllium is a chemical element and can naturally occur in water sources due to weathering of rocks and soil that contain beryllium minerals. Industrial activities such as mining, metal processing, and manufacturing can also release beryllium into water sources. Beryllium cannot break down easily in the environment and can persist in water and sediments for long periods.

The MCL for beryllium is 0.004 mg/L (milligrams per liter), with a PHG of 0.001 mg/L. The City has detected beryllium in exceedance of the PHG at one (1) well. The OEHHA has determined that beryllium is a health concern at certain levels of exposure and listed the health risk category as digestive system toxicity (harms the stomach or intestine).

Both the USEPA and the DDW list the BAT's for removing beryllium below the MCL as activated alumina, coagulation/filtration, ion exchange, lime softening, and RO. Since the City is meeting the MCL requirements, it is not recommended to initiate treatment.

Cadmium

Cadmium is a heavy-metal trace element which is used in several industrial processes. Environmental levels of cadmium have been increasing from smelting, cement production, and combustion of fossil fuels. Drinking water does not appear to be a significant source of cadmium exposure.

The MCL for cadmium is 0.005 mg/L (milligrams per liter), with a PHG of 0.00004 mg/L. The City has detected cadmium in exceedance of the PHG at one (1) well. The OEHHA has determined that cadmium is a health concern at certain levels of exposure and listed the health risk category as nephrotoxicity (harms the kidney).

Both the USEPA and DDW list the BAT's for removing cadmium below the MCL as ion exchange, lime softening, coagulation/filtration, and RO. Since the City is meeting the MCL requirements, it is not recommended to initiate treatment.

Dibromoacetic Acid

Dibromoacetic Acid is one (1) of the five (5) regulated Haloacetic Acids (HAA's) found in drinking water as a result of disinfection methods. Disinfection in drinking water is a

necessity to avoid infectious diseases in the general public from microbial contamination of drinking water supplies. Disinfection by chlorination results in the formation of toxic chemicals, known as disinfection byproducts (DBP's), in drinking water. The HAA's are one of the major categories of DBP's formed in the chlorination disinfection process.

The MCL for dibromoacetic acid is 0.06 mg/L (milligrams per liter), with a PHG of 0.00003 mg/L. The City has detected dibromoacetic acid in exceedance of the PHG in the distribution system. The OEHHA has determined that dibromoacetic acid is a health concern at certain levels of exposure and listed the health risk category as carcinogenicity. The numerical health risk for dibromoacetic acid above the PHG is $1x10^{-6}$ which means one excess cancer case per million people exposed.

The USEPA lists the BAT's for removing dibromoacetic acid as Granular Activated Carbon (GAC) which is a type of filtration, ion exchange, and high-pressure membranes. HAA's are currently monitored and reported to the SWRCB in the form of Locational Running Annual Averages (LRAA) and since the City is meeting MCL requirements it is not recommended at this time to initiate treatment.

PFOA and PFOS (PFAS)

Per- and polyfluoroalkyl substances (PFAS) are a group of man-made chemicals that have been widely used in various industries and products since the 1940s. Two (2) of these chemicals are known as perfluorooctanoic acid (PFOA) and perfluorooctane sulfonic acid (PFOS). PFOA and PFOS were widely used in industrial applications and consumer products, notably PFOA in nonstick cookware, and PFOS in stain and water-repellant fabrics and fire-fighting foams. The manufacture of these products was phased out in the US following concerns of their extreme persistence in the environment and their detection in virtually all human blood serum samples. Due to their unique properties, like being water, grease, and heat-resistant, they are found in everyday items and are known for their persistence in the environment and their potential to accumulate in living organisms, earning them the name "forever chemicals." Although levels in the environment have declined from their peak around the year 2000, PFOA and PFOS continue to be present in the environment and are found in California drinking water.

The MCL for PFOA is 4.0 ng/L (nanograms per liter), with a PHG of 0.007 ng/L. The MCL for PFOS is 4.0 ng/L, with a PHG of 1.0 ng/L. The City has detected PFOA and PFOS in exceedance of the MCL and PHG at one (1) well. The OEHHA has determined that PFOA and PFOS are health concerns at certain levels of exposure and listed the health risk category as carcinogenicity. The numerical health risk for PFOA and PFOS above the PHG is $1x10^{-6}$ which means one excess cancer case per million people exposed.

Both the USEPA and the DDW list the BAT's for removing PFAS below the MCL as GAC, anion exchange, RO, and nanofiltration. After exceeding the MCL at this well, the City began continuous monitoring for PFOA and PFOS, which is ongoing, real-time collection and analysis of data over an extended period, while working closely with the State Water Resources Control Board (SWRCB) to track various parameters, identify anomalies, and enable timely responses. While the well is now offline, the City will continue working closely with the SWRCB on determining the most economical and technological treatment to pursue in the future.

Radium 226 and 228

Radium is a natural occurring radioactive element that is present in rocks and soil in the earth's crust. Small amounts of radium can be found in the groundwater supply. When radium decays, they form isotopes. The most common isotopes found in the groundwater are radium 226 and radium 228. Deep bedrock aquifers used for drinking water sometimes contain levels of radium.

The MCL for radium 226 is 5 pCi/L (picocuries per liter), with a PHG of 0.05 (pCi/L) and radium 228 is 5 pCi/L, with a PHG of 0.019 pCi/L. The City has detected both radium 226 and radium 228 in exceedance of the PHG at (1) one well. The OEHHA has determined that both are a health concern at certain levels of exposure and listed the health risk category as carcinogenicity. The numerical health risk for radium above the PHG is $1x10^{-6}$ which means one excess cancer case per million people.

Both the USEPA and the DDW list the BAT's for removing radium below the MCL as ion exchange, lime softening, alum treatment, and RO. Since the City is meeting the MCL requirements, it is not recommended to initiate treatment.

1,2,3- Trichloropropane (TCP)

1,2,3-Trichloropropane (TCP) is not found in nature, it is a man-made chemical that was an impurity in soil fumigants used to control nematodes and sold under the brand names D-D, Telone and Telone II. TCP is a chlorinated hydrocarbon with high chemical stability.

The MCL for TCP is 0.005 ug/L (micrograms per liter), with a PHG of 0.0000007 ug/L. The City has detected TCP in exceedance of the MCL and PHG at multiple wells. The OEHHA has determined that TCP is a health concern at certain levels of exposure and listed the health risk category as carcinogenicity. The numerical health risk for TCP above the PHG is $1x10^{-6}$ which means one excess cancer case per million people.

The DDW lists GAC as the only BAT available for removing TCP contamination from groundwater, while the USEPA acknowledges other options, it still cites GAC as the recommended BAT as well. The City has installed GAC treatment to non-detectable

levels at several wells and has started the process to install GAC treatment at two (2) more wells where TCP has been detected, with the goal of eliminating all TCP exposure in the City's water system.

Tetrachloroethylene (PCE)

PCE is a perchlorinated two-carbon olefin. The primary uses of PCE are as a chemical intermediate for the production of chlorofluorocarbons and as a solvent used in cleaning operations (metal cleaning, vapor degreasing, and dry cleaning). In addition, many household products contain some level of PCE. Due to widespread use, PCE is a common environmental contaminant.

The MCL for PCE is 5.0 ug/L (micrograms per liter), with a PHG of 0.06 ug/L. The City has detected PCE in exceedance of the PHG at one (1) well. The OEHHA has determined that PCE is a health concern at certain levels of exposure and listed the health risk category as carcinogenicity. The numerical risk for PCE above the PHG is $1x10^{-6}$ which means one excess cancer case per million people exposed.

The USEPA lists the BAT's for removing PCE below the MCL as GAC, RO, and ion exchange. The well where the exceedance was detected is now inactivated with the SWRCB, therefore no treatment is necessary at this time.

Trihalomethanes

Trihalomethanes (THM's) are a group of chemical compounds formed when chlorine, used to disinfect water, reacts with natural organic matter in water. Four (4) of these chemicals are bromoform, chloroform, bromodichloromethane, and dibromochloromethane. Disinfection in drinking water is a necessity to avoid infectious diseases in the general public from microbial contamination of drinking water supplies. Disinfection by chlorination results in the formation of toxic chemicals, known disinfection byproducts (DBP's), in drinking water. Just as with HAA's, these DBP's include THM's.

The MCL for bromoform is 0.08 mg/L (milligrams per liter), with a PHG of 0.0005 mg/L. The City has detected bromoform in exceedance of the PHG in the distribution. The OEHHA has determined that bromoform is a health concern at certain levels of exposure and listed the health risk as carcinogenicity. The numerical risk for bromoform above the PHG is $1x10^{-6}$ which means one excess cancer case per million people exposed.

The MCL for chloroform is 0.08 mg/L (milligrams per liter), with a PHG of 0.0004 mg/L. The City has detected chloroform in exceedance of the PHG in the distribution. The OEHHA has determined that chloroform is a health concern at certain levels of exposure and listed the health risk as carcinogenicity. The numerical risk for chloroform above the PHG is $1x10^{-6}$ which means one excess cancer case per million people exposed.

The MCL for bromodichloromethane is 0.08 mg/L (milligrams per liter), with a PHG of 0.00006 mg/L. The City has detected bromodichloromethane in exceedance of the PHG in the distribution. The OEHHA has determined that bromodichloromethane is a health concern at certain levels of exposure and listed the health risk as carcinogenicity. The numerical risk for bromodichloromethane above the PHG is $1x10^{-6}$ which means one excess cancer case per million people exposed.

The MCL for dibromochloromethane is 0.08 mg/L (milligrams per liter), with a PHG of 0.0001 mg/L. The City has detected dibromochloromethane in exceedance of the PHG in the distribution. The OEHHA has determined that dibromochloromethane is a health concern at certain levels of exposure and listed the health risk as carcinogenicity. The numerical risk for dibromochloromethane above the PHG is $1x10^{-6}$ which means one excess cancer case per million people exposed.

The USEPA lists the BAT's for removing trihalomethanes below the MCL as enhanced coagulation or enhanced softening, followed by GAC or nanofiltration. THM's are currently monitored and reported to the SWRCB in the form of Locational Running Annual Averages (LRAA) and since the City is meeting MCL requirements it is not recommended at this time to initiate treatment.

Uranium

Uranium is a naturally occurring radioactive element that is ubiquitous in the earth's crust. Uranium is found in ground and surface waters due to its natural occurrence in geological formations. Due to its abundance in geological formations, uranium varies from place to place and is a highly variable source of contamination in drinking water. Since uranium occurs as a trace element it is found in many types of rocks. Other sources of contamination in the drinking water include phosphate deposits and mine tailings, as well as from run-off of phosphate fertilizers from agricultural land.

The MCL for uranium is 20 pCi/L (picocuries per liter), with a PHG of 0.43 pCi/L. The City has detected uranium in exceedance of the PHG at multiple wells. The OEHHA has determined that uranium is a health concern at certain levels of exposure and listed the health risk category as carcinogenicity. The numerical health risk for uranium above the PHG is 1x10^{-6} which means one excess cancer case per million people.

Both the USEPA and the DDW list the BATs for removing uranium as ion exchange, RO, lime softening, or coagulation/filtration. Treatment has been installed at one (1) well for past detection exceeding the MCL. Uranium is currently monitored and reported to the SWRCB in the form of Locational Running Annual Averages (LRAA) and since the City is meeting MCL requirements it is not recommended at this time to initiate additional treatment.

1,2-Dichloroethane

1,2-Dichloroethane (1,2-DCA) is a colorless, oily liquid with chloroform-like odor. It is primarily used in the production of vinyl chloride, a precursor to polyvinyl chloride (PVC) plastic. It is also used as a solvent in various industrial applications.

The MCL for 1,2-DCA is 0.005 mg/L (milligrams per liter), with a PHG of 0.00004 mg/L. The City has detected 1,2-DCA in exceedance of the MCL at one (1) well and in exceedance of the PHG in the distribution. The OEHHA has determined that 1,2-DCA is a health concern at certain levels of exposure and listed the health risk as carcinogenicity. The numerical risk for 1,2-DCA above the PHG is $1x10^{-6}$ which means one excess cancer case per million people exposed.

Both the USEPA and the DDW list the BATs for removing 1,2-DCA as GAC in combination with Packed Tower Aeration (PTA). The well where a detection above the MCL was detected has been taken offline. Because all other sources meet the MCL requirement it is not recommended to initiate treatment at this time.

Cost of Treatment

The cost of treatment can depend upon a number of constraints and factors. They include the type of treatment, the number of separate treatment facilities required, if there are multiple contaminants, and whether they can all be removed with one treatment technology or require multiple technologies. In some circumstances and with some contaminants, the money that would be required for these additional treatment processes might provide greater benefits of public health protection if spent on other water system operations, surveillance, new well construction, and monitoring programs. With respect to TCP, which is the most significant water quality problem affecting the City's groundwater supply, the City has installed or is in the process of installing GAC treatment to eliminate detectable concentrations of this contaminant from its system completely.

Recommendations for Further Action

The levels of constituents identified in this report are already significantly below the health based MCL's established to provide safe drinking water. Further reductions in these levels would require additional costly treatment processes. The ability of these processes to provide significant additional reductions in levels is uncertain. The health protection benefits of these possible reductions are not at all clear and may not be quantifiable. Therefore, no action is proposed at this time.