Golden State
Water Company
A Subsidiary of American States Water Company

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2022 Report on Public Health Goals

Claremont System

Report Prepared by
Golden State Water Company

Introduction

Public Health Goals - Background

Provisions of the California Health and Safety Code, Section 116470(b), specify that larger water utilities (>10,000 service connections) prepare a special report by July 1, 2022 if their water quality measurements have exceeded any Public Health Goals (PHGs). PHGs are non-enforceable goals established by the California 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 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.

Golden State Water Company (Golden State Water) is providing information in conformance with this requirement by providing this updated report. If a regulated constituent was detected in the water supply between 2019 and 2021 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 Maximum Contaminant Level (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?

The USEPA and the State Water Resources Control Board's Division of Drinking Water (DDW) are responsible for establishing regulations and setting drinking water standards and goals. These agencies, along with the California Public Utilities Commission (CPUC) set rules and regulations for water systems to follow.

PHGs are set by OEHHA and are based solely on public health risk considerations. None of the practical risk-management factors that are considered by the USEPA or DDW in setting 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 2019 and 2021 for purposes of determining compliance with drinking water standards

was considered. This data was summarized in our 2019, 2020, and 2021 Consumer Confidence Reports on Water Quality which were made accessible to all Golden State Water customers.

Guidelines Followed

The Association of California Water Agencies (ACWA) formed a workgroup which prepared guidelines for water utilities to use in preparing these reports. The ACWA guidelines were used in the preparation of our report. No guidance was available from state regulatory agencies.

Best Available Treatment Technology and Cost Estimates

Both the USEPA and DDW adopt Best Available Technologies (BATs) 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 PHGs or MCLGs

Inorganic Chemical Contaminants

Arsenic

Arsenic has been detected at levels up to 5.6 micrograms per liter (µg/L) in the water supplied to the Claremont System. The MCL is 10 µg/L and the PHG is 4 nanograms per liter (ng/L). Our water system is in full compliance with the drinking water standard for arsenic, but the arsenic level in the system at times exceeds the PHG.

The DDW and USEPA have determined that arsenic is a health concern at certain levels of exposure. The category of health risk associated with arsenic, and the reason that a drinking water standard was adopted for it, is that some people who drink water containing arsenic above the MCL over many years may experience skin damage and circulatory system problems and are at a

higher risk of getting cancer. The numerical health risk for the PHG of 4 ng/L is one excess cancer case per million people. The numerical health risk for the MCL of 10 µg/L is 2.5 excess cancer cases per thousand people.

The DDW lists the Best Available Technologies (BATs) for removing arsenic to below the MCL as activated alumina, ion exchange, lime softening, coagulation/filtration and reverse osmosis (RO). For the purpose of cost estimation, RO was selected as the treatment method to consistently remove arsenic below the PHG in the Claremont system.

Perchlorate

Perchlorate has been detected at levels up to 3 micrograms per liter (µg/L) in the water supplied to the Cordova System. The MCL is 6 µg/L and the PHG is 1 µg/L. Our water system is in full compliance with the drinking water standard for perchlorate, but the perchlorate level in the system at times exceeds the PHG.

The DDW and USEPA have determined that perchlorate is a health concern at certain levels of exposure. Perchlorate is an oxidizing chemical used in a variety of industrial processes. This chemical has been shown to cause endocrine (thyroid) toxicity and developmental toxicity in humans. The numerical health risk for the PHG of 1 µg/L is based on the lowest level of perchlorate in drinking water that prevents thyroidal uptake of iodine or a decrease in thyroid hormone production.

The DDW lists the Best Available Technologies (BATs) for removing perchlorate to below the MCL as ion exchange and biological treatment using fluidized bed reactors. For the purpose of cost estimation, ion exchange was selected as the treatment method to consistently remove perchlorate below the PHG in the Claremont System.

Organic Chemicals

Dibromochloropropane

Dibromochloropropane (DBCP) has been detected at a level of 26 ng/L in water supplied to the Claremont System. The MCL is 200 ng/L and the PHG is 3 ng/L. Our water system is in full compliance with the drinking water standard for DBCP, but the DBCP level in the system at times exceeds the PHG.

The DDW and USEPA have determined that DBCP is a health concern at certain levels of exposure. DBCP is a banned nematocide that may still be present in soils due to runoff or leaching from former use on various crops. This chemical has been shown to cause cancer in laboratory animals such as rats and mice when the animals are exposed at high levels over their lifetimes.

Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time. The numerical health risk for the PHG of 3 ng/L is one excess case of cancer per million people. The numerical health risk for the MCL of 200 ng/L is one excess case of cancer per ten thousand people. Additionally, some people who drink water containing DBCP in excess of the MCL over many years may experience reproductive difficulties.

The DDW lists the BATs for removing DBCP as treatment with granular activated carbon (GAC) and by packed tower aeration. For the purpose of cost estimation, GAC was selected as the treatment method to consistently remove DBCP below the PHG in the Claremont system.

Radiological Contaminants

Gross Alpha Particle Activity

Certain minerals are radioactive and may emit a form of radiation known as alpha radiation, or gross alpha particle activity. Gross alpha particle activity has been detected at levels up to 13 pico-Curies per liter (pCi/L) in the water supplied to the Claremont System. There is no PHG for gross alpha particle activity. However, the USEPA has established a MCLG level at 0 pCi/L. The MCL for gross alpha particle activity is 15 pCi/L based on an annual average of four quarterly samples. Our water system is in full compliance with the drinking water standard for gross alpha particle activity, but the level in the system at times exceeds the MCLG.

The DDW and USEPA have determined that gross alpha particle activity is a health concern at certain levels of exposure. This radiological constituent is a naturally occurring contaminant in some groundwater and surface water supplies. The category of health risk associated with gross alpha particle activity, and the reason that a drinking water standard was adopted for it, is that some people who drink water containing alpha emitters in excess of the MCL over many years may have an increased risk of getting cancer. The numerical health risk for the MCLG of 0 pCi/L is zero excess cancer cases. The numerical health risk for the MCL of 15 pCi/L is one excess cancer case per thousand people.

The DDW lists the BAT for removing gross alpha particle activity as reverse osmosis (RO). For the purpose of cost estimation, RO was selected as the treatment method to consistently remove gross alpha particle activity below the MCLG in the Claremont system.

Gross Beta Particle Activity

Certain minerals are radioactive and may emit a form of radiation known as photons and beta radiation. Gross beta particle activity has been detected at levels up to 3.82 pCi/L in the water supplied to the Claremont System. There is

no PHG for gross beta particle activity. The MCLG is 0 millirem per year (mrem/yr), and the MCL is 4 mrem/yr. Our water system is in full compliance with the drinking water standard for gross beta particle activity, but the level in the system at times exceeds the MCLG.

The DDW and the USEPA have determined that gross beta particle activity is a health concern at certain levels of exposure. This radiological constituent is a naturally occurring contaminant in some water supplies. The category of health risk associated with gross beta particle activity, and the reason that a drinking water standard was adopted for it, is that some people who drink water containing this contaminant in excess of the MCL over many years may have an increased risk of getting cancer. The numerical health risk for the MCLG of 0 mrem/yr is zero excess cancer cases. The numerical health risk for the MCL of 4 mrem/yr is 2 excess cancer cases per thousand people.

The BATs identified to treat gross beta particle activity are ion exchange and reverse osmosis (RO). For the purpose of cost estimation, RO was selected as the treatment method to consistently remove gross beta particle activity below the MCLG in the Claremont system.

Uranium

Uranium has been detected at levels up to 3.3 pCi/L in the water supplied to the Claremont System. The MCL is 20 pCi/L and the PHG is 0.43 pCi/L. Our water system is in full compliance with the drinking water standard for uranium, but the uranium level in the system at times exceeds the PHG.

The DDW has determined that uranium is a health concern at certain levels of exposure. This radiological constituent is a naturally occurring contaminant in groundwater supplies. Exposure to uranium in drinking water may result in toxic effects to the kidney. This constituent has also been shown to cause cancer in laboratory animals such as rats and mice when the animals are exposed at high levels over their lifetimes. Constituents that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time. The numerical health risk for the PHG of 0.43 pCi/L is one excess cancer case per million people. The numerical health risk for the MCL of 20 pCi/L is 5 excess cancer cases per hundred thousand people.

The DDW lists the BATs for removing uranium as ion exchange, reverse osmosis (RO), lime softening, or coagulation/filtration. For the purpose of cost estimation, RO was selected as the treatment method to consistently remove uranium below the PHG in the Claremont system.

Cost of Treatment

The cost of treatment can depend upon a number of factors. They include the type of treatment, the number of separate treatment facilities required, and if there are multiple contaminants, whether they can all be removed with one treatment technology or require multiple technologies. The table below lists the costs for the Claremont System to consistently remove the contaminants listed in the previous section to below the PHG or MCLG. Costs include construction and annual operational expenses. These costs are estimates only, and could in fact be much higher.

Best Available Technology	Number of Sites Required	Total Annual Cost	Monthly Cost / Connection
Reverse Osmosis	9	$13,003,379	$95.20
Ion Exchange	3	$731,813.81	$5.36
Granular Activated Carbon	1	$605,985	$4.44
TOTAL	13	$13,609,364	$99.64

Summary of Findings

Overall, six contaminants were detected in the Claremont System at concentrations above the PHGs and or MCLGs. Golden State Water did not serve water that contained contaminants in violation of recognized and enforceable MCLs. The drinking water quality of Golden State Water's Claremont System meets all drinking water standards for protection of public health.

If you have any questions about this report, please call us at (800) 999-4033. We are available to answer your questions 24 hours a day, 7 days a week, or visit our website at http://www.gswater.com.