



Golden State
Water Company
A Subsidiary of American States Water Company

Golden State Water Company
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2019 Report on Public Health Goals

Simi Valley 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, 2019 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 2016 and 2019 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 2016 and 2018 for purposes of determining compliance with drinking water standards

was considered. This data was summarized in our 2016, 2017, and 2018 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 7 micrograms per liter ($\mu\text{g/L}$) in the water supplied to the Simi Valley System. The MCL is 10 $\mu\text{g/L}$ 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 Simi Valley system.

Bromate

Bromate has been detected at levels up to 8.9 µg/L in the water supplied to the Simi Valley System. The MCL is an average of 10 µg/L and the PHG is 0.1 µg/L. Bromate is a chemical that is formed when ozone is used to disinfect drinking water; the ozone reacts with naturally occurring bromide found in source water. Compliance for bromate is based on a running annual average (RAA), computed quarterly, of monthly samples collected by the system. If the average of samples covering any consecutive four-quarter period exceeds the MCL, the system is in violation of the MCL. The RAA for 2016-2018 was below the MCL. Our water system is in full compliance with the drinking water standard for bromate, but we have detected bromate in the system above the PHG level.

The DDW and USEPA have determined that bromate is a health concern at certain levels of exposure. The category of health risk associated with bromate, and the reason that a drinking water standard was adopted for it, is that some people who drink water containing bromate in excess of the MCL over many years may have an increased risk of getting cancer. The numerical health risk for the PHG of 0.10 µg/L is one excess cancer case per million people. The numerical health risk for the MCL of 10 µg/L is 1 excess cancer case per ten thousand people.

The BAT for limiting bromate to below the PHG is control of the ozone treatment process to reduce production of bromate. This is typically accomplished by treating the source water in a variety of ways to reduce the natural organic matter (NOM), which will allow a reduction in the applied dose of ozone used for disinfection. However, the source water is treated with ozone prior to entering the GSWC service area for Simi Valley. Therefore, the bromate would need to be removed at the point of entry to the GSWC service area. For the purpose of cost estimation, RO was selected as the treatment method to consistently remove bromate below the PHG in the Simi Valley system.

Copper

Copper sampling is conducted at indoor faucets of selected customer homes, as directed by the Lead and Copper Rule. The Action Level for copper is 1300 µg/l and the PHG is 300 µg/L. Action Level (AL) means the concentration of

copper in water which is used to determine the treatment requirements that a water system is required to complete. Compliance is determined by comparing the AL to the 90th percentile level for all copper samples taken. The 90th percentile copper level in the Simi Valley System is 510 µg/L. This is below the AL per the Lead and Copper Rule, but it is above the PHG level.

The principal source of copper in tap water is the pipes and plumbing fixtures in the customer's own household plumbing. Factors that can increase the amount of copper in tap water include: household fittings or faucets made of brass; copper plumbing materials; and water that is soft or corrosive.

Based on human data, people who drink water containing copper in excess of the Action Level (1300 µg/L) could develop gastrointestinal irritation over a short-term exposure.

Our water system is in full compliance with the Lead and Copper Rule. Based on our extensive sampling, it was determined according to State regulatory requirements that we meet the Action Level for copper. Therefore, we are deemed by DDW to have optimized corrosion control for our system.

In general, optimizing corrosion control is considered to be the BAT to manage copper. We will continue to monitor our water quality parameters that relate to corrosivity, such as the pH, hardness, alkalinity, and total dissolved solids, and will take action if necessary to maintain our system in an optimized corrosion control condition.

Since we are meeting the optimized corrosion control requirement, it is not prudent to initiate additional corrosion control treatment as it involves the addition of other chemicals that could cause additional water quality issues. Therefore, no estimate of cost is included.

Lead

Lead sampling is conducted at indoor faucets of selected customer homes, as directed by the Lead and Copper Rule. The Action Level for lead is 15 µg/l and the PHG is 0.2 µg/L. Action Level (AL) means the concentration of lead in water which is used to determine the treatment requirements that a water system is required to complete. Compliance is determined by comparing the AL to the 90th percentile level for all lead samples taken. The 90th percentile lead level in the Simi Valley System is 7.4 µg/L. This is below the AL per the Lead and Copper Rule, but it is above the PHG level.

The category of health risk for lead is damage to the kidneys or nervous system of humans. The numerical health risk for the PHG of 0.2 µg/L is 3 excess cancer cases per hundred million people. The numerical health risk for the AL of 15 µg/L is 2 excess cancer cases per million people.

Our water system is in full compliance with the Lead and Copper Rule. Based on our extensive sampling, it was determined according to State regulatory

requirements that we meet the Action Levels for lead. Therefore, we are deemed by CDHS to have “optimized corrosion control” for our system.

In general, optimizing corrosion control is considered to be the Best Available Technology (BAT) to deal with lead. We will continue to monitor our water quality parameters that relate to corrosion control, such as the pH, hardness, alkalinity and total dissolved solids, and will take action if necessary to maintain our system in an “optimized corrosion control” condition.

Since we are meeting the “optimized corrosion control” requirement, it is not prudent to initiate additional corrosion control treatment as it involves the addition of other chemicals and there could be additional water quality issues raised. Therefore, no estimate of cost has been included.

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 14 pico-Curies per liter (pCi/L) in the water supplied to the Simi Valley 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 Simi Valley system.

Uranium

Uranium has been detected at levels up to 16 pCi/L in the water supplied to the Simi Valley 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 Simi Valley 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 6 pCi/L in the water supplied to the Simi Valley 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 Simi Valley system.

Microbiological Contaminants

Total Coliform Bacteria

Total coliform bacteria have been present in a maximum of 2% of samples collected monthly from the distribution system. This percentage is the highest monthly percentage over the 36-month period from 2016 through 2018. The Simi Valley System collects between 48 and 60 samples every month at points throughout the water distribution system that are analyzed for total coliforms. Total coliform bacteria were present in 4 of the 1,885 samples collected during the 36 months from 2016 through 2018.

The MCL for total coliform is 5% of monthly samples, and the MCLG is 0% of monthly samples. Our water system is in full compliance with the drinking water standard for total coliform bacteria, but the level in the system at times exceeded the MCLG.

The DDW and USEPA have determined that the presence of total coliform is a possible health concern. Total coliform bacteria are common in the environment and are generally not harmful themselves. The presence of these bacteria in drinking water, however, may indicate a problem with water treatment or the pipes that distribute the water. Their presence could also indicate that the water may be contaminated with organisms that can cause disease. Disease symptoms may include diarrhea, cramps, nausea, and possibly jaundice, and associated headaches and fatigue. These symptoms, however, are not just associated with disease-causing organisms in drinking water, but also may be caused by a number of factors other than your drinking water.

Because coliform is only an indicator of the potential presence of pathogens, it is not possible to state a specific numerical health risk. The DDW has set an enforceable drinking water standard for total coliform to reduce the risk of adverse health effects. Under this standard, no more than 5% of the samples collected during a month can contain these bacteria. Drinking water that meets this standard is usually not associated with a health risk from disease-causing bacteria and should be considered safe.

The DDW lists four operating and maintenance conditions as the BAT for protection against microbiological contaminants. These conditions are practiced by Golden State Water, and are as follows:

- Protection of wells from coliform contamination by appropriate placement and construction;
- Maintenance of a disinfectant residual throughout the distribution system;
- Proper maintenance of the distribution system; and
- Filtration and disinfection of approved surface water, and disinfection of groundwater.

We conduct sampling of our wells to ensure they are microbiologically safe and add chlorine to the water to help protect the distribution system. 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. Golden State Water has already taken all of the steps described by the DDW as best available technology for coliform bacteria in Section 64447, Title 22, CCR; therefore, no cost estimate for additional treatment is given.

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 Simi Valley 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	8	17,823,335	\$111.18
TOTAL	8	17,823,335	\$111.18

Summary of Findings

Overall, eight contaminants were detected in the Simi Valley System at concentrations above the PHGs and or MCLGs. At no time did Golden State Water ever serve water that contained contaminants in violation of recognized and enforceable MCLs. The drinking water quality of Golden State Water’s Simi Valley 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>.