Drinking Water Public Health Goals Report 2025

Los Angeles Department of Water and Power
Water System | Water Quality Division

The mission of the Water System at the Los Angeles Department of Water and Power is to support the vitality and sustainability of the City, providing our customers and the communities we serve with reliable, high quality and competitively priced water services in a safe and environmentally responsible manner.

TABLE OF CONTENTS

TERMS USED IN THIS REPORT

Action Level (AL)	The concentration of a contaminant which, if exceeded, triggers treatment or other requirements that a water system must follow.
Best Available Technology (BAT)	BAT as identified by the USEPA is a treatment technology that has high- removal efficiencies, is compatible with other types of water treatment processes, is commercially available, is not limited to use only in particular geographic regions, has integrity for a reasonable service life, is reasonably affordable by large water systems, and can be mass-produced and put into service in time for implementation of regulations.
Cancer Risk	Cancer Risk is the upper bound estimate of excess cancer risk from lifetime exposure. Actual cancer risk may be lower or zero. Cancer risk is stated in terms of excess cancer cases per million (or fewer) population, e.g., 1×10^{-6} means one additional cancer case per million population exposed; 5×10^{-5} means five additional cancer cases per 100,000 population exposed.
Carcinogen	Carcinogen is a compound suspected or proven to cause cancer. Research studies conducted to demonstrate a constituent is a carcinogen are usually conducted on mice or rats. The compound is a ‘proven’ carcinogen when a percentage of the animals develop tumors, but it will be considered a “probable” or “possible” human carcinogen if limited or no human data are available.
Carcinogenic	Carcinogenic means capable of producing or initiating cancer.
Chloramine	A combination of chlorine and ammonia, which is used as a disinfectant. Chloramine is an approved disinfectant, which is less reactive with naturally occurring organic matter in water, forming fewer byproducts.

Detection Limit for Purposes of Reporting (DLR)	Detection limit for purposes of reporting is established by SWRCB-DDW for each contaminant that is regulated. This is the lowest detection level that all water laboratories in California are expected to meet. The DLR factors the measuring precision that can be obtained by standard tests methods and laboratory instrumentation.
Disinfection Byproducts (DBPs)	Compounds that form when naturally occurring organic matter combines with chemicals used to disinfect drinking water, such as chlorine. The most common disinfection by-products are trihalomethanes, which are created when chlorine reacts with humic compounds in drinking water.
Gastrointestinal	Relating to, affecting, or including both the stomach and intestines.
Granular Activated Carbon (GAC)	This material is generally made from coal or other organic matter, such as wood, peat, or coconut shells. GAC has a high surface area (up to about 1000 square meters per gram), which attracts organics present in the water. GAC is placed in a structure, much like a filter, and the water is passed through the media to remove the organic contaminants. After time, the capacity of GAC to remove organic materials is used up and GAC must be replaced or regenerated. Regeneration entails heating GAC up to about 850°C and adding steam to remove the accumulated organics.
Maximum Contaminant Level (MCL)	The enforceable drinking water standard set by either the USEPA or the SWRCB-DDW. MCLs are based on the lowest observed health effects level plus a margin of safety and the current technology available to detect and treat the constituent. USEPA can set a treatment technique in lieu of MCL for compounds that are difficult to monitor or are affected by conditions in the distribution system.
Maximum Contaminant Level Goal (MCLG)	MCLGs are non-enforceable goals established by USEPA based solely on health. For all carcinogenic constituents (i.e., those compounds known or suspected of causing cancer), USEPA's policy is to set the MCLG at zero. For non-carcinogenic constituents, the MCLG is set at a level that is protective of human health, considering the potential for adverse effects and allowing for a margin of safety.
Neurotoxic	Capable of destroying or adversely affecting the nervous system or interfering with nerve signal transmission. Effects may be reversible (for example, effects on chemicals that carry nerve signals across gaps between nerve cells) or irreversible (destruction of nerve cells).

OEHHA	California Environmental Protection Agency, Office of Environmental Health Hazard Assessment. Agency that is responsible for developing Public Health Goals.
Public Health Goal (PHG)	The concentration of a contaminant in drinking water that poses no significant health risk if consumed in a lifetime. PHGs are developed and published by OEHHA using current risk assessment, principles, and practices. This is usually no more than a one-in-one million excess cancer risk (1x 10^{-6}) level for a lifetime of exposure. At that level, not more than one person in a population of one million people drinking the water daily for 70 years would be expected to develop cancer as a result of exposure to that chemical.
Reverse Osmosis (RO)	RO is a treatment technology that uses membranes with tiny pores to clean the water. There is very little that remains in the water after RO Treatment. For that reason, the waste stream is even more difficult to dispose of than that of nanofiltration. Another downside of RO is the size of the waste stream. This is typically about 15-20 percent of the water that is treated by the system.
SWRCB-DDW	State Water Resources Control Board – Division of Drinking Water
Treatment Technique	A required practice intended to reduce the level of a contaminant in drinking water that is set by USEPA for contaminants that are difficult or costly to measure. For these contaminants, USEPA may choose a specific water treatment practice (such as filtration or corrosion control) to reduce these contaminants. The treatment technique is required instead of achieving a numeric MCL for these contaminants.
USEPA	United States Environmental Protection Agency

EXECUTIVE SUMMARY

The Los Angeles Department of Water and Power (LADWP) provides water that meets all drinking water standards and requirements. LADWP strives to provide the highest quality water at an affordable cost to our customers. This Public Health Goals Report (Report) identifies the contaminants in the Los Angeles water supplies that are within drinking water standards but above their respective state Public Health Goal (PHG) or federal Maximum Contaminant Level Goal (MCLG). The contaminants were identified during calendar years 2022 to 2024. Both the PHGs and MCLGs represent non-enforceable goals, at which a theoretical minimal risk to public health is expected. These goals are used by regulatory agencies to establish the enforceable drinking water standards that water supplies must meet.

The Report explains the following three important findings regarding public heath goals:

- There may be no established or scalable treatment method to achieve PHG levels.
- There would be significant costs and resources required to build and operate additional water treatment facilities to achieve public health goals, Space and siting of the facilities would also create a significant challenge in some locations.
- There are environmental tradeoffs to the additional treatment, such as high energy usage, chemical usage, and water loss.

LADWP routinely monitors its water supplies for over 200 substances, of which 98 have a Maximum Contaminant Level (MCL) and eight have treatment techniques, making a total of 106 that have enforceable health-based standards. During the 2022 to 2024 monitoring period, LADWP met the MCL standards for all 106 of these regulated substances. Also, 23 regulated substances were detected in at least one of the City of Los Angeles' (City) major water supplies. Nine of the 23 regulated substances were detected at levels above a PHG or an MCLG (see Appendix, Tables 1 and 2).

Treating the City's drinking water to PHG and MCLG standards require significant investments and new treatment facilities. The estimated cost using current Best Available Technology (BAT), is around $1.3 billion (B) in capital investments and an increase in the annual operations and maintenance budget of $186 million (M). These additional treatment costs would cause the typical residential bill to increase by 13% (see Appendix, Table 3).

LADWP's current ten-year capital improvement plan is estimated at $13.2B. This estimate does not include additional investments that would be needed to achieve the PHG's and MCLG's described in this report.

LADWP must carefully evaluate any additional actions beyond the planned capital improvement programs for water quality. At this time, it is unclear how much additional public health benefit would be realized by improving the quality of drinking water to PHG levels. However, efforts should be made to reduce risks in the most efficient manner possible.

BACKGROUND

The California Safe Drinking Water Act of 1996 added requirements for the PHG reporting to the California Code of Regulations (CCR). Since 1997, public water systems with more than 10,000 service connections are required to prepare a PHG report once every three years if one or more detected constituents in water exceed a PHG.

The California Environmental Protection Agency, Office of Environmental Health Hazard Assessment (OEHHA) is required to adopt PHGs for all regulated drinking water contaminants and for any new contaminant that will be considered for regulation. The first 27 PHGs were adopted by OEHHA on December 31, 1997. PHGs represent non-enforceable goals based solely on public health considerations. The PHGs are developed using the best available health effects data in current scientific literature. Since 1997 a total of 102 PHGs have been adopted by OEHHA.

The process of developing drinking water standards begins by calculating a theoretical level at which a contaminant may be present in drinking water without causing adverse health effects. This level, which assumes minimal to zero risk, is called a “goal” and often is not practically achievable because the technology may not exist to remove a contaminant to that level. Also, the costs associated with installing additional treatment and infrastructure to remove a contaminant may be prohibitive. Nevertheless, the goals are useful tools for assessing risk when determining standards, or MCLs, that water suppliers are required to meet. The federal and state Safe Drinking Water Act requires regulators to establish an MCL as close as feasible to the MCLG (or PHG), taking into consideration among many factors, cost, and technical feasibility.

This Report is intended to provide decision makers and our customers with specific information regarding drinking water safety and what actions are needed to move water quality closer to these goals.

LADWP MAJOR WATER SOURCES

The City's potable water supply comes from three major water sources, each of varying water quality with different levels of constituents and contaminants. To manage a citywide water quality program, it is necessary to treat these source waters to varying degrees depending on the types and levels of contaminants found in each source. For consistency, the monitoring points chosen for comparison to the PHGs (or the MCLGs) are the same as those found in LADWP's annual Drinking Water Quality Report available at https://www.ladwp.com/who-we-are/water-system/las-drinking-water-quality-report. These monitoring points represent our three major supply sources. These three sources are shown in Figure 1, and are discussed as follows:

Los Angeles Aqueduct Filtration Plant

The Los Angeles Aqueduct Filtration Plant (LAAFP) provided an average of 38 percent of the City's potable water supply from 2022 to 2024. LAAFP receives water from the eastern Sierra Nevada via the Los Angeles Aqueduct (LAA) which has been pre-treated at the Cottonwood Polymer Plant and untreated water from the Sacramento-San Joaquin River Delta via the Californian Aqueduct supplied by the Metropolitan Water District of Southern California (MWD). LAAFP treats the water by ozonation, filtration and ultra-violet light (UV). Chloramine, which is also used for disinfection, is added before the water is distributed to customers. LAAFP serves most of the San Fernando Valley and the Western portion of the City (as far south as the Los Angeles International Airport). Some of LAAFP water is also blended with local well water, which is the second major water source. A portion of the LAAFP water is stored in the Los Angeles Reservoir prior to being served to customers.

Combined Groundwater Wells

Groundwater provided an average of 7 percent of the City's potable water supply from 2022 to 2024. This represents a composite of groundwater from various well fields in the San Fernando Valley and wellfields in Central Los Angeles - Mission, Tujunga, Rinaldi-Toluca, North Hollywood, Pollock, and Manhattan. A large pipeline conveys water from most of the wellfields in the San Fernando Valley southerly, where it combines with treated LAAFP water to serve customers in the Central and portions of the Eastern areas of the City. Water from Central Basin wells (Manhattan) supply the local areas. Customers in these areas receive varying blends of the three major supply sources.

MWD Purchased Water

Water purchased from MWD serves as LADWP's third major source of potable supply and provided an average of 55 percent of the City's water supply from 2022 to 2024. Untreated MWD water is treated at the LAAFP. Treated MWD water is the only source of supply to the Harbor and Eastern Los Angeles service areas. This water is from the Colorado River and the State Water Project, which are treated at MWD's Jensen, Weymouth, and Diemer Filtration Plants.

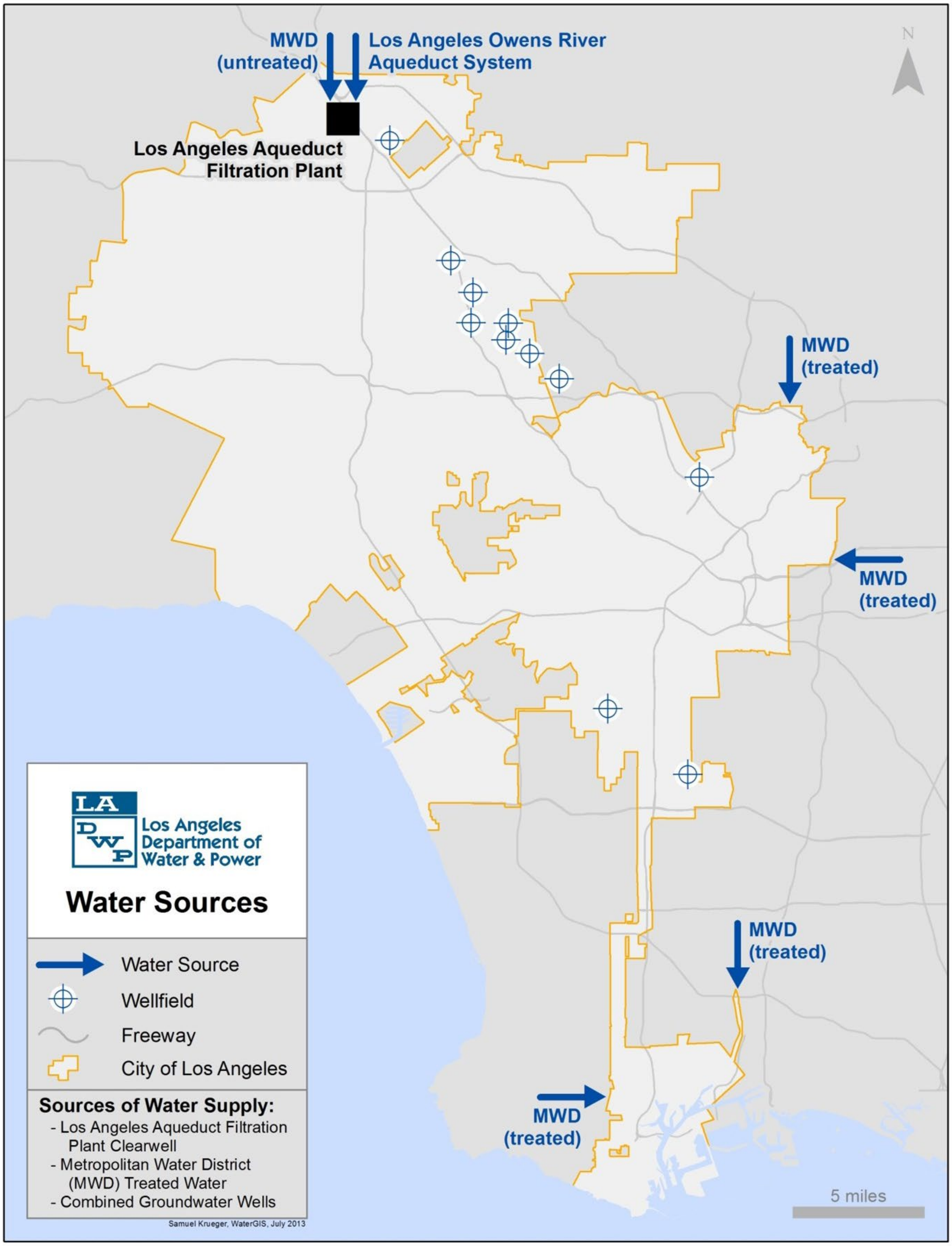

Figure 1. Major Water Sources for the City of Los Angeles

RISK ASSOCIATED WITH MAJOR WATER SOURCES

For the purpose of this Report, the data used for comparison are from the 2022, 2023, and 2024 Drinking Water Quality Reports. LADWP routinely collects over 25,000 water quality samples annually and tests and reports on more than 200 contaminants in each of the City's major sources. A total of 23 contaminants with enforceable drinking water MCLs were detected in one or more major water source. None of the detected contaminants exceeded the drinking water MCLs. Nine of the detected contaminants were at or above a PHG or MCLG (See Appendix Table 1). The data for lead and copper used in this report are the result of residential tap sampling as required by the Lead and Copper Rule. Lead was not detected in any LADWP water sources while copper was only detected in trace elements.

In this section, each of the nine contaminants are listed. Each contaminant includes a brief explanation regarding its current drinking water standard and the level detected in LADWP's drinking water sources. The contaminants are grouped by chemical characteristics. The four groups are:

1) inorganic compounds
2) organic compounds
3) disinfection byproducts
4) radionuclides

No microbiological contaminant exceeded a PHG or MCLG.

INORGANICS

ARSENIC

The PHG for arsenic is 0.004 parts per billion (ppb). The United States Environmental Protection Agency (USEPA) issued a revised regulation for arsenic in January 2001. The regulation set the arsenic MCL at 10 ppb and MCLG at 0 ppb effective January 2006. Arsenic at high concentrations can be lethal. At low levels, arsenic is known to cause skin cancer in humans. Recent studies suggest that arsenic may play a key role in initiating many other types of cancers as well.

Level in LADWP Drinking Water

LAA supply is the main source of arsenic in LADWP water. Arsenic in the LAA is a naturally occurring contaminant found in the otherwise pristine water source from the eastern Sierra Nevada watershed. It originates from geothermal springs, such as the one that feeds Hot Creek, at levels of around 180 ppb. This concentration level is substantially reduced as the water blends with snow melt and other sources as it moves south to the City. Historical average levels of arsenic in the untreated LAA supply have ranged from 9 to 69 ppb. From 2022 to 2024, the highest average arsenic levels after treatment were 4 ppb, which is 60% below the regulatory MCL. Arsenic has also been detected at levels above the Detection Limit for Purposes of Reporting (DLR) in combined groundwater wells and purchased MWD water.

Status

LADWP's continuing efforts to reduce arsenic in the LAA water supply enables us to reduce the level in treated water to below 10 ppb. There are two major treatment facilities that reduce the arsenic level prior to conveyance to the City. The first treatment facility along the LAA is at the Cottonwood Polymer Plant. In conjunction with the Haiwee Reservoirs, the polymer applied at Cottonwood captures and removes most of the arsenic. The second is the treatment process at LAAFP in Sylmar where arsenic levels are further reduced to a range of less than 1 to 9 ppb.

The LADWP plans to construct a new Fairmont Sedimentation Plant within the Fairmont Reservoir property to pre-treat source water supplied to the LAAFP. The Fairmont Plant will treat raw water from the first and second Los Angeles Aqueducts as well as the State Water Project East Branch, and will reduce turbidity, arsenic, and Total Organic Carbon levels using the proposed flocculation and sedimentation processes. The Fairmont Sedimentation project has an estimated capital cost in excess of $900 million and is estimated to be completed in the early 2030's. Even after this treatment plant is constructed and operating, the arsenic levels at the LAAFP will not meet PHG levels.

COPPER (At-the-Tap)

The PHG for copper is 300 ppb. This PHG is based on the observed effects for small children with a safety factor of ten. LADWP meets the PHG for copper in the distribution system.

Copper can increase within the distribution system and in customers' premise plumbing. Therefore, At-the-Tap sampling is a more accurate measurement of copper levels compared to routine sampling conducted in the distribution system, and copper is regulated by results of customer tap sampling. These At-the-Tap samples are collected from homes under conditions that are most likely to result in high copper and lead, as required by the Lead and Copper Rule.

Level in LADWP Drinking Water

In 2023, At-the-Tap sampling was conducted at 105 households. The 90th percentile for copper was 529 ppb, with a range of 5 ppb to 1,020 ppb. and MCLG

Status

The LADWP system is optimized for corrosion control, which includes metals like copper. In 2019, LADWP submitted to the State Water Resources Board – Division of Drinking Water (SWRCB-DDW) an updated evaluation of our Corrosion Control strategy. After reviewing the report, SWRCB-DDW determined that LADWP has optimized corrosion control by maintaining a minimum pH value throughout the distribution system. Maintaining the pH value will assist LADWP with controlling corrosion within its distribution system thus minimizing the levels of lead and copper at the customer tap.

HEXAVALENT CHROMIUM

OEHHA established a PHG of 0.02 ppb for hexavalent chromium in 2011. The MCL for hexavalent chromium is 10 ppb effective October 2024. Some people who drink water containing hexavalent chromium in excess of the MCL over many years have an increased risk of getting cancer.

Level in LADWP Drinking Water

In 2024, the highest average level of hexavalent chromium was 0.2 ppb in the groundwater sources. This level was 98% below the regulatory MCL.

Status

BATs for treating hexavalent chromium include ion exchange, reverse osmosis, and reduction/coagulation/filtration. LADWP is constantly researching the feasibility of incorporating new treatment methods.

ORGANICS

TETRACHLOROETHYLENE (PCE)

OEHHA established a PHG of 0.06 ppb for tetrachloroethylene (also known as perchloroethylene or PCE) in 2001 based on carcinogenic effects observed in animal experiments. USEPA established an MCLG of zero ppb and an MCL of 5 ppb. Some people who drink water containing tetrachloroethylene in excess of the MCL over many years may develop liver problems and have an increased risk of getting cancer.

Level in LADWP Drinking Water

Groundwater supply is the source of tetrachloroethylene, which is found in discharge from factories, dry cleaners, and auto shops (metal degreasers). From 2022 to 2024, the highest detection of tetrachloroethylene was 0.8 ppb in the Northern Combined Wells. This level was 85% below the regulatory MCL.

Status

BAT for treating tetrachloroethylene includes granular activated carbon (GAC) and packed tower aeration. LADWP is currently in the process of implementing new groundwater remediation facilities that include advanced oxidation processes and GAC. These new systems will reduce PCE below detectable levels (0.5 ppb) and will provide the vast majority of our groundwater supply. Additionally, reverse osmosis is capable of treating tetrachloroethylene.

TRICHLOROETHYLENE (TCE)

OEHHA established an updated PHG of 1.7 ppb for trichloroethylene (TCE) in 2009 based on carcinogenic effects observed in animal experiments. Additionally, the EPA set trichloroethylene's MCL at 5 ppb effective 1989. Some people who drink water containing trichloroethylene in excess of the MCL over many years may develop liver problems and have an increased risk of getting cancer.

Level in LADWP Drinking Water

Groundwater supply is the source of trichloroethylene, which is found in discharge from metal degreasing sites and other factories. From 2022 to 2024, the highest detection of trichloroethylene was 3 ppb in the Northern Combined Wells. This level was 40% below the regulatory MCL.

Status

BAT for treating trichloroethylene includes GAC and packed tower aeration. LADWP is currently in the process of implementing new groundwater remediation facilities that include advanced oxidation processes and GAC. These new systems will reduce TCE to below detectable levels (0.5 ppb) and will provide the vast majority of our groundwater supply. Additionally, reverse osmosis is capable of treating trichloroethylene.

DISINFECTION BY-PRODUCTS

Disinfectant residual is critical to maintaining high water quality in the distribution system and to protect public health. However, Disinfection By-Products (DBPs) are formed in all drinking water that contains a disinfectant residual. At LADWP, treated water is chloraminated before entering the water distribution system to provide this important disinfectant residual. Any naturally occurring organic matter that is not completely removed by LAAFP has the potential to form DBPs.

BROMATE

OEHHA established a PHG of 0.1 ppb for bromate in 2009 based on carcinogenicity. Bromate is an inorganic disinfection byproduct that is formed when naturally occurring bromide in water is exposed to ozone. The federal MCL for bromate is 10 ppb and the MCLG is 0 ppb.

Level in LADWP Drinking Water

From 2022 to 2024 the highest running annual average bromate level at the LAAFP was 5 ppb, which is 50% below the MCL of 10 ppb . Currently, treated water from the LAAFP has trace levels of bromate due to the combination of bromide and ozonation.

Status

Bromate levels in surface water fluctuate depending on the amount of untreated California Aqueduct water that is treated at the LAAFP. In drought years, LADWP relies more heavily on purchased water to supplement the City's needs. Unfortunately, during drought periods, bromide levels tend to increase in the water from the California Aqueduct.

The Dr. Pankaj Parekh Ultraviolet (UV) Disinfection Facility at the LAAFP was completed in 2013, which reduced the use of ozone as a disinfectant and thus reduced the formation of bromate. In January 2022, LADWP commissioned a second UV disinfection plant at the Los Angeles Reservoir.

.

RADIONUCLIDES

Radionuclides were detected in all City sources of supply and can be naturally occurring or man-made.

Radionuclides detected in the treated purchased water supply are naturally occurring; although some radioactivity may be attributed to the abandoned mine tailings near the Colorado River in Moab, Utah.

GROSS ALPHA AND GROSS BETA ACTIVITY

OEHHA has examined the practicality of proposing a PHG for gross alpha and gross beta but concluded that it would not be practical to develop because the results are used as a screening tool to categorize alpha and beta emitters. The MCLGs for all radionuclides are set at 0 picocuries per liter (pCi/L). Gross alpha and gross beta radioactivity are classified as carcinogenic. The MCL for gross alpha activity (including radium 226, but excluding radon and uranium) is 15 pCi/L. The MCL for gross beta particle activity is 50 pCi/L.

Level in LADWP Drinking Water

From 2022 to 2024, the highest average level of gross alpha particle activity was 8 pCi/L in the LAAFP. This level was 47% below the regulatory MCL. The highest average level of gross beta particle activity was 5 pCi/L in LADWP and 6 pCi/L in MWD water sources. These levels were 90% and 88% below the regulatory MCL, respectively in LADWP and MWD water sources.

Status

No treatment for gross alpha or gross beta particle is currently provided. LADWP continues to monitor for radiological compounds as required in the treated LADWP water, at entry points into the distribution system, and at individual wells.

URANIUM

The radiological contaminant uranium is naturally occurring and was detected in all sources of the City’s water supply. Uranium was also detected in the treated purchased water supply. Uranium from this source is naturally occurring.

The PHG for uranium is 0.43 pCi/L based on carcinogenicity. The state MCL for uranium is 20 pCi/L, which is approximately equal to 30 ppb. The federal MCL is 30 ppb and the MCLG is 0 ppb for uranium.

Level in LADWP Drinking Water

From 2022 to 2024, the average level of uranium was 6 pCi/L in LADWP and 2 pCi/L in MWD water sources. These levels were 70% and 90% below the regulatory MCL, respectively in LADWP and MWD water sources.

Status

No treatment for uranium is currently provided. LADWP continues to monitor for uranium as required in the treated LADWP water, at entry points into the distribution system, and at individual wells. MWD conducts monitoring of their sources and provides the results to LADWP.

TREATMENT OPTIONS AND COSTS

For each contaminant identified in this Report, a summary of treatment options and costs is presented in Table 3 of the Appendix.

To approach the levels of PHGs and MCLGs for all detected contaminants, using reverse osmosis, LADWP estimates it would require approximately $1.3B in additional capital investments coupled with an increased budget for annual operations and maintenance of approximately $186M. Such an investment would significantly increase customers' bills. This would be in addition to the existing level of treatment being provided to all City water sources.

Reverse osmosis treatment also results in water loss of approximately 15-20%. Utilizing this treatment at the LAAFP would have a significant adverse effect to water conservation and water supply reliability. It should be noted that all cost estimates for treatment in this Report do not include the cost of brine disposal, water replacement, and auxiliary facilities. The cost of replacing water lost to treatment processes, such as reverse osmosis, could not be estimated at this time, but is expected to be significant.

Implementing treatment to meet PHGs or MCLGs would result in an additional annualized (capital and operations) cost of $293M (see Appendix Table 3). For the average residential customer this would result in an increased cost of approximately $197 per year or $17 per month. This would cause the typical residential bill to increase by 13%.

LADWP has an ongoing water system capital improvements program to improve reliability and safeguard water for Los Angeles. LADWP will invest approximately $13.2B in this program over the next 10 years. This will fund water quality improvements and compliance with existing drinking water regulations, such as the Long Term 2 Surface Water Treatment Rule, Groundwater Rule, Total Coliform Rule, Disinfection By-products Rule, and Lead and Copper Rule Revisions and Improvements. LADWP also invests in the replacement and improvement of infrastructure, such as trunk lines, main pipes, meters, and service lines. Aging facilities such as pumping, chlorination, and regulator stations will also be upgraded or replaced.

Concurrently, LADWP is investigating new treatment technologies, through research partnerships and collaborations with other water agencies and water associations, which will significantly improve water quality at substantially lower costs.

A PERSPECTIVE ON RISK

Providing water that is safe to drink is the primary goal of LADWP. Waterborne outbreaks of infectious diseases, such as cholera, decreased in the late nineteenth century with the introduction of chlorine disinfection. Since then, other microbial contaminants that affect health have been reduced through advances in drinking water treatment technology. Since LADWP first began water disinfection treatment over 100 years ago, the risk factors for getting waterborne diseases have been substantially reduced.

State regulators such as SWRCB-DDW and OEHHA use drinking water risk assessments to determine the public health impacts to populations by determining MCLs and PHGs. MCLs are health protective drinking water standards to be met by public water systems. MCLs consider not only chemicals' health risks but also factors such as their detectability and treatability, as well as costs of treatment. Health & Safety Code §116365(a) requires a contaminant's MCL to be established at a level as close to its PHG as is technologically and economically feasible, placing primary emphasis on the protection of public health. Along with the MCL, a regulated chemical also has a DLR, the level at which we are confident about quantification being reported.

MCLs are reviewed every five years for three criteria: (1) The relationship between the PHG and both federal and state MCLs; (2) any changes in technology or treatment techniques that permit a materially greater protection of public health or attainment of the public health goal; and (3) any new scientific evidence indicating that the substance might present a materially different risk to public health than was previously determined. In addition, occurrence is assessed for each regulated contaminant in drinking water sources using the four most recent years of analytical data from SWRCB-DDW's Water Quality Monitoring database.

PHGs established by OEHHA are concentrations of drinking water contaminants that pose no significant health risk if consumed for a lifetime, based on current risk assessment principles, practices, and methods. OEHHA establishes PHGs pursuant to Health & Safety Code §116365(c) for contaminants with MCLs, and for those for which MCLs will be adopted.

It is equally important to have a clear perspective about the theoretical nature of the numerical risk presented in this Report. OEHHA understandably assesses risk in a very conservative manner and often with limited scientific data. So, there is often a need for additional scientific research to substantiate the established goals. Even more important, is the need to balance the risk associated with exposure to drinking water to the risk from other environmental factors and human behavior. According to OEHHA, present methodology does not allow a numerical determination of public health risk from non- carcinogens. However, non-carcinogenic risk determinations are essential if the objective is to achieve a well-balanced approach to risk reduction.

LADWP's APPROACH TO MANAGING RISK

While this Report is in response to requirements of the California Health and Safety Code, LADWP places a priority on understanding the issues that drive regulations and future regulatory trends. This is a vital component of prioritizing the treatment to effectively reduce or eliminate contaminants that are found in LADWP water supplies.

As noted from the health assessments presented in this Report, there are eight contaminants that can be enumerated for theoretical cancer risk and one contaminant where the PHG is based on non-carcinogenic health effects. Among these, LADWP considers arsenic to be the prime contaminant to target for further reduction. The process of determining risks from contaminants, even if theoretical, offers a valuable tool to decision makers when addressing public health improvements in drinking water supplies. This more holistic and integrated approach to risk management will achieve the greatest risk reduction per cost of treatment by presenting decision makers with the information to prioritize treatment selection based on the amount of risk reduction afforded rather than a contaminant-by-contaminant approach subject to media and politics. As LADWP selects treatment technologies based on this integrated approach, public health benefits, as well as state and federal standards, are considered. This approach provides the greatest benefit for LADWP customers as efficient treatment processes are implemented.

Advancements in analytical technology, greater knowledge of health effects, and further scientific research will continue to create new drinking water quality regulations. To ensure continued improvement in water quality, LADWP completed a 10-year capital budget (2024-2034) for its water system totaling nearly $13.2B. An additional investment of approximately $1.3B would be needed to improve water quality to levels approaching PHGs and MCLGs.

The LADWP will use the information from this report to continue its strategic planning process and public engagement on water quality issues. The LADWP is committed to working with its customers and the community to optimize public health protection, affordability, environmentally preferred treatments, and sustainability.

REFERENCES

Association of California Water Agencies, “Guidance for Report on Public Health Goals,” April 2025.

Cal/EPA, Office of Environmental Health Hazard Assessment, Internet “Health Risk Information for Public Health Goal Exceedance Reports,” February 2025.

Cal/EPA, Office of Environmental Health Hazard Assessment, “Public Health Goal for Arsenic in Drinking Water,” April 2004.

Cal/EPA, Office of Environmental Health Hazard Assessment, “Public Health Goal for Copper in Drinking Water,” February 2008.

Cal/EPA, Office of Environmental Health Hazard Assessment, “Public Health Goal for Tetrachloroethylene in Drinking Water,” August 2001.

Cal/EPA, Office of Environmental Health Hazard Assessment, “Public Health Goal for Trichloroethylene in Drinking Water,” July 2009.

Cal/EPA, Office of Environmental Health Hazard Assessment, “Public Health Goal for Uranium in Drinking Water,” August 2001.

Cal/EPA, Office of Environmental Health Hazard Assessment, “Public Health Goal for Bromate in Drinking Water,” December 2009.

Los Angeles Department of Water and Power, 2022 Drinking Water Quality Report, July 2023.

Los Angeles Department of Water and Power, 2023 Drinking Water Quality Report, June 2024.

Los Angeles Department of Water and Power, 2024 Drinking Water Quality Report, June 2025.

Los Angeles Department of Water and Power, Water Quality Compliance, “Optimization of Corrosion Control for Compliance with the Lead and Copper Rule,” March 2019.

Los Angeles Department of Water and Power, Pure Water Los Angeles, 2024. https://www.ladwp.com/who-we-are/water-system/sources-supply/pure-water-los-angeles.

National Cancer Institute, Bethesda, MD “Cancer Trends Progress Report,” July 2021.

Risk Assessment and Management Handbook for Environmental, Health, and Safety Professionals. Kolluru, R. V. et al. 1996, McGraw-Hill, Inc., New York.

US Environmental Protection Agency, “2018 Edition of the Drinking Water Standards and Health Advisories Tables,” USEPA 822-S-12-001, March 2018.

US Environmental Protection Agency, “National Primary Drinking Water Regulations: Disinfectants and Disinfection Byproducts Notice of Data Availability; Final Rule,” December 16, 1998.

US Environmental Protection Agency, “Drinking Water Contaminants, and Their Maximum Contaminant Levels (MCLs),” http://www.epa.gov/safewater/mcl.html.

US Environmental Protection Agency, “Drinking Water Treatment Technology Unit Cost Models,” https://www.epa.gov/sdwa/drinking-water-treatment-technology-unit-cost-models.

US Environmental Protection Agency, "National Primary Drinking Water Regulations: Radionuclides; Final Rule," Federal Register, December 7, 2000.

US Environmental Protection Agency, "National Primary Drinking Water Regulations; Arsenic and Clarifications to Compliance and New Source Contaminants Monitoring; Final Rule," January 22, 2001.

.

APPENDIX

PUBLIC HEALTH GOALS REPORT SUMMARY

TABLE 1 LEVELS OF CONTAMINANTS DETECTED IN TREATED WATER IN 2022-2024

CONTAMINANT	State PHG or Federal (MCLG)	State MCL or (AL)	State DLR	Level in Water Sources[1] (2022 – 2024)		
				LAAFP Effluent	Combined Wells	Purchased MWD Water
DISINFECTION BY-PRODUCTS (µg/L)						
Bromate	0.1	10	1[2]	Citywide HLRAA = 5		
INORGANICS (µg/L)						
Arsenic	0.004	10	2	4	3	1
Copper (At-the-Tap)[3]	300	(1300)	50	90th Percentile = 529		
Hexavalent Chromium	0.02	10	0.1	0	0.2	0
ORGANICS (µg/L)[4]						
Tetrachloroethylene (PCE)	0.06	5	0.5	0	0	0
Trichloroethylene (TCE)	1.7	5	0.5	0	0	0
RADIONUCLIDES (pCi/L)						
Gross Alpha Particle Activity	(0)	15	3	8	8	0
Gross Beta Particle Activity	(0)	50	4	4	4	4
Uranium	0.43	20	1	4	7	1

Footnotes

1 A contaminant is considered detected if its compliance average value of test results in 2022 to 2024 is equal to or above its state DLRs. Values listed here are based on the Consumer Confidence Reports between 2022 – 2024. Values for purchased water are the averages of effluents from three MWD treatment plants: Weymouth, Diemer, and Jensen.

2. The DLR for bromate is 1 µg/L for analysis performed using EPA Method 317.0 Revision 2.0, EPA Method 321.8, or EPA Method 326.0.

3 Results are based on 90th percentile from at-the-tap sampling conducted city-wide in 2023.

4. Average results for the organic compounds fall below the state DLR and are considered zero for the purposes of this table. For the highest detected values of these compounds, please see Table 2.

HLRAA = Highest Locational Running Annual Average

TABLE 2 HEALTH EFFECTS OF CONTAMINANTS AT VARIOUS LEVELS

CONTAMINANTS	Health Risk Category	Health Goal	Cancer Risk at Health Goal	California MCL	Cancer Risk at California MCL	Highest Level in LADWP Drinking Water	Cancer Risk at Level in LADWP Drinking Water
		PHG or (MCLG)	Per Million People Exposed		Per Million People Exposed		Per Million People Exposed
DISINFECTION BY-PRODUCTS (µg/L)							
Bromate	Carcinogenicity	0.1	1	10	100	HLRAA = 5	50
INORGANICS (µg/L)							
Arsenic	Carcinogenicity	0.004	1	10	2500	8	2000
Copper (At-the-Tap)	Digestive System Toxicity	300	NC	AL=1300	NC	529	NC
Hexavalent Chromium	Carcinogenicity	0.02	1	10	500	0.4	20
ORGANICS (µg/L)							
Tetrachloroethylene (PCE)	Carcinogenicity	0.06	1	5	80	0.8	13
Trichloroethylene (TCE)	Carcinogenicity	1.7	1	5	3	3.4	2
RADIONUCLIDES (pCi/L)							
Gross Alpha Particle Activity	Carcinogenicity	(0)	0	15	1000*	8	533
Gross Beta Particle Activity	Carcinogenicity	(0)	0	50	2000**	9	360
Uranium	Carcinogenicity	0.43	1	20	50	10	23

* For ^{210}Po, the most powerful alpha emitter. OEHHA indicates that cancer risk could be up to these values, depending upon which isotopes are present.

** For ^{210}Pb, the most powerful beta emitter. OEHHA indicates that cancer risk could be up to these values, depending upon which isotopes are present.

AL = Federal Action Level (At-the-Tap)

HLRAA = Highest Locational Running Annual Average

NC = Non-carcinogenic

Cancer Risk – Upper bound estimate of excess cancer risk from lifetime exposure. Actual cancer risk may be lower or zero. Cancer risk is stated in terms of excess cancer cases per million (or fewer) population, e.g., 1×10^{-6} means one additional cancer case per million population exposed.

TABLE 3 TREATMENT OPTIONS AND ESTIMATED COSTS TO MEET PUBLIC HEALTH GOALS

TABLE 3. TREATMENT OPTIONS AND COSTS TO MEET HEALTH GOALS

Treatment Options[3]	Contaminants	Capital Cost[3]	Annualized Capital Cost[1]	Annual O&M Cost[3]	Annualized Capital and Annual O&M Costs[1,3]	Increased Water Rate/Cost per HCF[2]	Increased Annual Cost for the Average Residential Customer[2]	Increased Monthly Cost for the Average Residential Customer[2]
Reverse Osmosis	Inorganics, Organics, DBPs, Radionuclides	$1,326,218,000	$107,606,000	$186,148,000	$293,754,000	$1.50	$196.19	$16.35

[1] Capital costs are annualized over a 20-year period at a 5 percent interest rate compounded monthly.

[2] The following assumptions are used to compute the potential increase to the typical single dwelling residential water bill. In the 2024 calendar year, the average residential use in Los Angeles was 130.7 hundred-cubic-feet (HCF). Including nonresidential use, approximately179.2 million HCF were sold. The typical water bill for residential customers was $122.06 per month. Treatment costs to reduce all contaminant levels to the PHG or detection limit would increase the typical residential bill to approximately $138.41 per month.

[3] Cost estimates for Reverse Osmosis are based on the Pure Water Los Angeles Project (2025).