## UNREGULATED CONTAMINANTS – CITY OF FORT WORTH SAMPLING RESULTS

| Compound | Measure | Range | 2018 Level | MRDL | MRDLG | Common Source of Substance |
|---|---|---|---|---|---|---|
| Chloral Hydrate | ppb | 0.12 to 0.34 | 0.34 | Not regulated | N/A | By-product of drinking water disinfection |
| Bromoform | ppb | 0 to 5.15 | 5.15 | Not regulated | 0 | By-products of drinking water disinfection; not regulated individually; included in Total Trihalomethanes |
| Bromodichloromethane | ppb | 1.99 to 7.08 | 7.08 | Not regulated | 0 | |
| Chloroform | ppb | 2.43 to 8.40 | 8.4 | Not regulated | 70 | |
| Dibromochloromethane | ppb | 1.31 to 6.94 | 6.94 | Not regulated | 60 | |
| Monochloroacetic Acid | ppb | 1.5 to 3.9 | 3.9 | Not regulated | 70 | By-products of drinking water disinfection; not regulated individually; included in Haloacetic Acids |
| Dichloroacetic Acid | ppb | 3.9 to 8.5 | 8.5 | Not regulated | 0 | |
| Trichloroacetic Acid | ppb | 0 to 2.2 | 2.2 | Not regulated | 20 | |
| Monobromoacetic Acid | ppb | 0 to 2.3 | 2.3 | Not regulated | N/A | |
| Dibromoacetic Acid | ppb | 1 to 4.3 | 4.3 | Not regulated | N/A | |

## UNREGULATED CONTAMINANTS – CITY OF KELLER SAMPLING RESULTS

| Compound | Measure | Range | 2018 Level | MRDL | MRDLG | Common Source of Substance |
|---|---|---|---|---|---|---|
| Bromoform | ppb | 0 to 1.30 | 0.31 | Not regulated | None | By-products of drinking water disinfection; not regulated individually; included in Total Trihalomethanes |
| Bromodichloromethane | ppb | 1.69 to 2.69 | 1.98 | Not regulated | None | |
| Chloroform | ppb | 1.71 to 2.38 | 2.04 | Not regulated | None | |
| Dibromochloromethane | ppb | 1.03 to 2.25 | 1.54 | Not regulated | None | |
| Monochloroacetic Acid | ppb | 0 to 2.90 | 0.97 | Not regulated | None | By-products of drinking water disinfection; not regulated individually; included in Haloacetic Acids |
| Dichloroacetic Acid | ppb | 2.00 to 5.70 | 4.22 | Not regulated | None | |
| Trichloroacetic Acid | ppb | 0 | 0 | Not regulated | None | |
| Monobromoacetic Acid | ppb | 0 to 2.80 | 0.50 | Not regulated | None | |
| Dibromoacetic Acid | ppb | 0 to 2.60 | 1.38 | Not regulated | None | |
| Bromochloroacetic Acid | ppb | 2.00 to 4.30 | 3.14 | Not regulated | None | |

***Unregulated contaminants*** are those for which the EPA has not established drinking water standards. The purpose of unregulated contaminant monitoring is to assist the EPA in determining the occurrence of unregulated contaminants in drinking water and whether future regulation is warranted.

## SECONDARY CONSTITUENTS-CITY OF FORT WORTH SAMPLING RESULTS

| Compound | Measure | 2018 Range |
|---|---|---|
| Bicarbonate | ppm | 108 to 144 |
| Calcium | ppm | 42 to 52.1 |
| Chloride | ppm | 11.8 to 40 |
| Conductivity | umhos/cm | 302 to 471 |
| pH | units | 8.6 to 8.7 |
| Magnesium | ppm | 3.20 to 8.64 |
| Sodium | ppm | 14.8 to 30.3 |
| Sulfate | ppm | 26.3 to 36.5 |
| Total Alkalinity as CaCO3 | ppm | 98.2 to 136 |
| Total Dissolved Solids | ppm | 156 to 251 |
| Total Hardness as CaCO3 | ppm | 118 to 162 |
| Total Hardness in Grains | grains/gallon | 7 to 9 |

***Secondary constituents*** are items that do not relate to public health but rather to the aesthetic effects. These items are often important to industry.

## RAW WATER QUALITY MONITORED REGULARLY

TRWD monitors the raw water at all lake intake sites for *Cryptosporidium*, *Giardia Lamblia* and viruses. Their source is human and animal fecal waste in the watershed. The 2018 sampling showed low level detections of *Cryptosporidium*, *Giardia Lamblia*, and viruses in some but not all of the water supply sources. Viruses are treated through disinfection processes. *Cryptosporidium* and *Giardia Lamblia* are removed through disinfection and/or filtration.

## HALOACETIC ACID GROUPS - CITY OF FORT WORTH SAMPLING RESULTS

| Compound | Measure | Average | Range | HAA5 | HAA6Br | HAA9 | Common Sources of Compound |
|---|---|---|---|---|---|---|---|
| Dichloroacetic Acid | ppb | 4.62 | 2.60 to 7.88 | HAA5 | | HAA9 | By-products of drinking water disinfection |
| Monochloroacetic Acid | ppb | 0.24 | 0 to 6.22 | HAA5 | | HAA9 | |
| Trichloroacetic Acid | ppb | 0 | 0 to 0 | HAA5 | | HAA9 | |
| Monobromoacetic Acid | ppb | 0 | 0 to 0 | HAA5 | HAA6Br | HAA9 | |
| Dibromoacetic Acid | ppb | 1.56 | 0 to 4.52 | HAA5 | HAA6Br | HAA9 | |
| Bromochloroacetic Acid | ppb | 2.88 | 0 to 4.36 | | HAA6Br | HAA9 | |
| Bromodichloroacetic Acid | ppb | 0 | 0 to 0 | | HAA6Br | HAA9 | |
| Chlorodibromoacetic Acid | ppb | 0 | 0 to 0 | | HAA6Br | HAA9 | |
| Tribromoacetic Acid | ppb | 0 | 0 to 0 | | HAA6Br | HAA9 | |

The above table includes all of the compounds that comprise each of the haloacetic acid groups. Compounds that are not detected are usually not listed in this report; however, those undetected are listed to provide complete information on the compounds that comprise each of the three groups in the UCMR 4 table below.



## UCMR 4 - CITY OF FORT WORTH SAMPLING RESULTS

| Compound | Measure | Average | Range | Common Sources of Substance |
|---|---|---|---|---|
| Manganese | ppb | 0.27 | 0 to 1.29 | Naturally occurring; used in drinking water and wastewater treatment; used in steel production, fertilizer, batteries and fireworks |
| HAA5 | ppb | 6.42 | 2.6 to 18.62 | By-products of drinking water disinfection |
| HAA6Br | ppb | 4.44 | 0 to 8.88 | By-products of drinking water disinfection |
| HAA9 | ppb | 9.3 | 0 to 22.98 | By- products of drinking water disinfection |

Fort Worth's testing detected only four of the thirty compounds included in the fourth round of unregulated contaminant monitoring. The detections were one metal and the three haloacetic acid disinfection by-product groups.

## 2018 WATER LOSS AUDIT

The City of Keller's Water Conservation Plan addresses several measures to reduce water loss and improve efficient water use. In the water loss audit submitted to the Texas Water Development Board for the time period of January-December 2018, the system lost an estimated 126,202,885 gallons of water from the 2,898,699,896 gallons of water purchased. Leaks, line breaks, unmetered fire protection, hydrant flushing for health and safety purposes, unauthorized consumption, data discrepancies, and other factors all contribute to water loss. The city will continue to audit its water supply and implement water conservation controls to minimize system losses.

## TWICE PER WEEK WATERING ALWAYS IN EFFECT

Maximum twice per week watering and prohibition on watering any day between 10 a.m. and 6 p.m. is a year-round water conservation measure. Under the Water Conservation Plan, residential addresses ending in an even number (0, 2, 4, 6, or 8) may water on Wednesdays and Saturdays. Residential addresses ending in an odd number (1, 3, 5, 7 or 9) may water on Thursdays and Sundays. All non-residential locations (apartment complexes, businesses, industries, parks, medians, etc.) may water on Tuesdays and Fridays. No watering on Mondays.

## WATER CONSERVATION TIPS

**Conserving water inside your home:**

- Fix leaking faucets, pipes, toilets, etc.
- Replace old fixtures; install water-saving devices in faucets, toilets, and appliances.
- Wash only full loads of laundry.
- Take shorter showers.
- Turn off water while shaving or brushing teeth.
- Soak dishes before washing.

**Conserving water outdoors:**

- Water lawn and landscape in early morning or late evening.
- Use mulch around plants and shrubs.
- Repair leaks in faucets and hoses.
- Use water-saving nozzles.
- Use water from a bucket to wash the car; save the hose for rinsing.

## STORMWATER QUALITY

Stormwater is water that originates during precipitation events. Stormwater can pick up dirt, debris, and other contaminants and carry them to streams, creeks, and lakes. The major contribution of pollution to local watersheds is caused by stormwater runoff from urbanized areas.

**Stormwater Pollution Prevention Measures:**

- Pick up waste after pets.
- Never fertilize lawns before rain event.
- Use organic lawn care methods.
- Do not blow grass clippings, leaves, or other yard waste to streets or storm drains; mulch lawn clippings and leave them on the lawn.
- Do not wash the vehicle on paved surface; wash it on the grass with bio-friendly soap or in a designated commercial car wash.
- Recycle household paint, motor oil, antifreeze, tires, and batteries.
- Do not overwater lawns to prevent the excess water runoff.
- Report littering/illegal dumping to the local authority (Keller Town Hall 817-743-4000).

Please call our office (817-743-4080) if you have questions. We ask that all our customers help us protect our water sources, which are the heart of our community, our way of life and our children's future.

City of KELLER




# 2018 Drinking Water Quality Report
# CITY OF KELLER
Public Water System # 2200096

This report is a summary of the quality of the water provided to Keller customers. The analysis was made by using the data from the most recent U.S. Environmental Protection Agency (EPA) required tests and is presented in the attached pages. This information helps you become more knowledgeable about what's in your drinking water. Keller's constant goal is to provide you with a safe and dependable supply of drinking water. If you have any questions about this report or concerning your water utility, please contact the City of Keller Water Department at 817-743-4200.

**En Español:** Este reporte incluye informacion importante sobre el agua para tomar. Para asistencia en español, por favor de llamar al telefono 817-743-4200.

**Public Participation Opportunities:** Keller City Council meetings are held on the first and third Tuesday of each month. Meetings generally start with a Pre-Council meeting at 5 p.m. followed by the regular City Council meeting at 7 p.m. All Keller City Council meetings are open to the public. For scheduling and information, call 817-743-4007 or email townhall@cityofkeller.com.

The City of Keller purchases its water from the City of Fort Worth. Fort Worth uses surface water from Lake Worth, Eagle Mountain Lake, Lake Bridgeport, Richland Chambers Reservoir, Cedar Creek Reservoir, Lake Benbrook and the Clear Fork Trinity River. Fort Worth owns Lake Worth. The U.S. Army Corps of Engineers is responsible for Benbrook Lake. The other four lakes are owned and operated by the Tarrant Regional Water District (TRWD).

The Texas Commission on Environmental Quality (TCEQ) has assessed the lakes and rivers that are the sources of Fort Worth's drinking water. TCEQ classified the risk to these sources of water as high for most contaminants. High susceptibility means there are activities near the source water and/or watersheds that make it very likely that chemical constituents come into contact with the source water. It does not mean that there are any health risks present.

TRWD, from which Fort Worth purchases its raw water, received the assessment reports. For more information on source water assessments, please refer to www.tceq.texas.gov/drinking water/SWAP/index_swa.html.

All drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that the water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the EPA's Safe Drinking Water Hotline at 1-800-426-4791.

You may be more vulnerable than the general population to certain microbial contaminants, such as *Cryptosporidium*, in drinking water. Infants, some elderly, or immunocompromised persons such as those undergoing chemotherapy for cancer; those who have undergone organ transplants; those who are undergoing treatment with steroids; and people with HIV/AIDS or other immune system disorders can be particularly at risk from infections. You should seek advice about drinking water from your physician or health care provider. Additional guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* are available from the Safe Drinking Water Hotline at 800-426-4791.

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity. Contaminants that may be present in source water include:

- Microbial contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.
- Inorganic contaminants, such as salts and metals, which can be naturally occurring or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.
- Pesticides and herbicides, which might have a variety of sources such as agriculture, urban stormwater runoff, and residential uses.
- Organic chemical contaminants, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, and septic systems.
- Radioactive contaminants, which can be naturally occurring or the result of oil and gas production and mining activities.

In order to ensure that tap water is safe to drink, the EPA prescribes regulations that limit the amount of certain contaminants in water provided by public water systems. Food and Drug Administration regulations establish limits for contaminants in bottled water that must provide the same protection for public health.

Contaminants may be found in drinking water that may cause taste, color, or odor problems. These types of problems are not necessarily causes for health concerns. For more information on taste, odor, or color of drinking water, please contact the City of Keller Water Department at 817-743-4200.

## ABBREVIATIONS AND DEFINITIONS

| | |
|---|---|
| **NTU** | Nephelometric Turbidity Units (a measure of water turbidity or clarity) |
| **pCi/L** | picocuries per liter (a measure of radioactivity) |
| **ppm** | parts per million, or milligrams per liter (mg/L) |
| **ppb** | parts per billion, or micrograms per liter (µg/L) |
| **umhos/cm** | micromhos per centimeter (measures conductivity of water) |
| **grains/gallon** | unit of water hardness |
| **N/A** | not applicable |

**Action Level (AL):** The concentration of a contaminant which, if exceeded, triggers treatment or other requirements that a water system must follow.

**Level 1 Assessment:** A study of the water system to identify potential problems and determine (if possible) why total coliform bacteria were found.

**Level 2 Assessment:** A very detailed study of the water system to identify potential problems and determine (if possible) why an Escherichia coli (E. coli) maximum contaminant level (MCL) violation has occurred and/or why total coliform bacteria were found on multiple occasions.

**Maximum Contaminant Level (MCL):** The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to maximum contaminant level goals (MCLGs) as feasible using the best available treatment technology.

**Maximum Contaminant Level Goal (MCLG):** The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

**Maximum Residual Disinfectant Level (MRDL):** The highest level of disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

**Maximum Residual Disinfectant Level Goal (MRDLG):** The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contamination.

**Treatment Technique (TT):** A required process intended to reduce the level of a contaminant in drinking water.



The City of Keller routinely monitors for contaminants in your drinking water according to federal and state laws. The following pages show results of monitoring for the period of January 1, 2018 through December 31, 2018.

## LIST OF REGULATED CONTAMINANTS – CITY OF FORT WORTH SAMPLING RESULTS

| Contaminant | Measure | MCL | 2018 Level | Range | MCLG | Violation | Common Source of Substance |
|---|---|---|---|---|---|---|---|
| Beta Particles & photon emitters | pCi/L | 50 | 5.6 | 4.4 to 5.6 | 0 | No | Decay of natural and man-made deposits |
| Combined Radium | pCi/L | 5 | 2.5 | N/A | 0 | No | Erosion of natural deposits |
| Uranium | ppb | 30 | 1.1 | 0 to 1.1 | 0 | No | Erosion of natural deposits |
| Arsenic | ppb | 10 | 1.10 | 0 to 1.1 | 0 | No | Erosion of natural deposits; runoff from orchards; runoff from glass and electronic production wastes |
| Atrazine | ppb | 3 | 0.1 | 0.0 to 0.1 | 3 | No | Runoff from herbicide used on row crops |
| Barium | ppm | 2 | 0.07 | 0.05 to 0.07 | 2 | No | Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits |
| Cyanide | ppb | 200 | 84.3 | 0 to 84.3 | 200 | No | Discharge from plastic and fertilizer factories; discharge from steel and metal factories |
| Fluoride | ppm | 4 | 0.61 | 0.17 to 0.61 | 4 | No | Water additive, which promotes strong teeth; erosion of natural deposits; discharge from fertilizer and aluminum factories |
| Nitrate (measured as Nitrogen) | ppm | 10 | 0.67 | 0.17 to 0.67 | 10 | No | Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits |
| Nitrite (measured as Nitrogen) | ppm | 1 | 0.02 | 0.02 to 0.02 | 1 | No | Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits |
| Bromate | ppb | 10 | 4.83 | 0 to 10.7 | 0 | No | By-product of drinking water disinfection |
| Haloacetic Acids | ppb | 60 | 12.1 | 1.6 to 14 | N/A | No | By-product of drinking water disinfection |
| Total Trihalomethanes | ppb | 80 | 17.1 | 2.09 to 20.1 | N/A | No | By-product of drinking water disinfection |

| Contaminant | Measure | MRDL | 2018 Level | Range | MRDLG | Violation | Common Source of Substance |
|---|---|---|---|---|---|---|---|
| Chloramines | ppm | 4 | 3.26 | 1.02 to 4.27 | 4 | No | Water additive used to control microbes |

| Contaminant | High | Low | Average | MCL | MCLG | Violation | Common Source of Substance |
|---|---|---|---|---|---|---|---|
| Totaql Organic Carbon | 1 | 1 | 1 | TT = % removal | N/A | No | Naturally occuring |
| Total Organic Carbon is used to determine disinfection by-product precursors. | | | | | | | |

| Contaminant | Measure | MCL | 2018 Level | MCLG | Violation | Common Source of Substance |
|---|---|---|---|---|---|---|
| Turbidity | NTU | TT=1 TT=Lowest monthly % of samples ≤ 0.3 NTU | 0.5 99.9% | N/A | No | Soil runoff (turbidity is a measure of the cloudiness of water. It is monitored because it is a good indicator of the effectiveness of the filtration system) |

**Turbidity** has no health effects. However, turbidity can interfere with disinfection and provide a medium for microbial growth. Turbidity may indicate the presence of disease-causing organisms. These organisms include bacteria, viruses, and parasites that can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.



## LIST OF REGULATED CONTAMINANTS – CITY OF KELLER SAMPLING RESULTS

| Contaminant | Year of Testing | Measure | MCL | Highest Level or Average Detected | Range of Samples | MCLG | Violation | Common Source of Substance |
|---|---|---|---|---|---|---|---|---|
| Nitrate (measured as Nitrogen) | 2018 | ppm | 10 | 0.252 | 0.180 to 0.252 | 10 | N | Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits |
| Nitrite (measured as Nitrogen) | 2017 | ppm | 1 | 0.0415 | 0 to 0.0415 | 1 | N | Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits |

Because Keller historically has had low levels of nitrite in its water, the TCEQ requires this monitoring to occur only once every nine years. The test results shown above are from 2017. The next monitoring will occur in 2026.

| Disinfectant | Measure | MRDL | 2018 Level | Range | MRDLG | Violation | Common Source of Substance |
|---|---|---|---|---|---|---|---|
| Chloramines | ppm | 4 | 2.64 | 2.20 to 3.00 | 4.0 | Yes | Water additive used to control microbes |

Although all appropriate monitoring had been completed and the quality of Keller's water was never in jeopardy, staff missed the third-quarter submission deadline for the 2018 Disinfectant Level Quarterly Operating Report required by the TCEQ.

| Disinfectant By-Product | Measure | MCL | 2018 Highest Level or Average Detected | Range | MCLG | Violation | Common Source of Substance |
|---|---|---|---|---|---|---|---|
| Haloacetic Acids | ppb | 60 | 10 | 4 to 10.6 | N/A | N | By-product of drinking water disinfection |
| Total Trihalomethanes | ppb | 80 | 11 | 4.69 to 7.38 | N/A | N | By-product of drinking water disinfection |

| Contaminant | Year of Testing | Measure | Action Level (AL) | 90th Percentile | # Sites Over AL | MCLG | Violation | Likely Source of Contaminant |
|---|---|---|---|---|---|---|---|---|
| Copper | 2017 | ppm | 1.3 | 0.4300 | 0 | 1.3 | N | Erosion of natural deposits; leaching from wood preservatives; Corrosion of household plumbing systems |
| Lead | 2017 | ppm | 0.015 | 0.0023 | 1 | 0 | N | Corrosion of household plumbing systems; erosion of natural deposits |

Because Keller historically has had low levels of lead and copper in its water, the TCEQ requires this monitoring to occur only once every three years. The test results shown above are from 2017. The next monitoring will occur in 2020.

**90th percentile value**: 90% of the samples were at or below this value. EPA considers the 90th percentile value the same as an "average" value for other contaminants. If more than 10% of tap water samples exceed the action level, water systems must take additional steps.

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. The City of Keller is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available at the Safe Drinking Water Hotline or at http://www.epa.gov/safewater/lead.

## TOTAL COLIFORMS – CITY OF FORT WORTH SAMPLING RESULTS

| Contaminant | Measure | MCL | 2018 Level | MCLG | Violation | Common Source of Substance |
|---|---|---|---|---|---|---|
| Total Coliforms (including fecal coliform & E. coli) | % positive samples | Presence in 5% or less of monthly samples | Presence in 1.1% of monthly samples | 0 | N | Naturally present in the environment as well as feces; fecal coliforms and E. coli only come from human and animal fecal waste |

## TOTAL COLIFORMS – CITY OF KELLER SAMPLING RESULTS

| Contaminant | Measure | MCL | 2018 Level | MCLG | Violation | Common Source of Substance |
|---|---|---|---|---|---|---|
| Total Coliforms (including fecal coliform & E. coli) | % positive samples | Presence in 5% or less of monthly samples | Presence in 0% of monthly samples | 0 | N | Naturally present in the environment as well as feces; fecal coliforms and E. coli only come from human and animal fecal waste |

***Total coliform bacteria*** are used as indicators of microbial contamination of drinking water because testing for them is easy. While not disease-causing organisms themselves, they are often found in association with other microbes that are capable of causing disease. Coliform bacteria are hardier than many disease-causing organisms; therefore, their absence from water is a good indication that the water is microbiologically safe for human consumption.