

2018 Water Quality Report

Modesto System- 5010010

(Includes Empire)



This report contains important information about your drinking water.

The City of Modesto supplies you with clean, reliable drinking water. We are pleased to provide you with water that meets United States Environmental Protection Agency (USEPA) standards for safety. City staff works diligently to comply with emerging environmental issues and drinking water regulations.

In accordance with the USEPA and California regulations under the Safe Drinking Water Act, water utilities are required to provide detailed water quality information to their consumers.

This report contains important information about your drinking water. If the report is not available in your native language, we encourage you to identify someone who understands it and can translate for you.

Contact Us:

Water Services Division, PO Box 642, Modesto, CA 95353

Field Services, Water Conservation, Water Quality, and Emergencies: 209-342-2246

Utility Billing, Payment, Service on/off: 209-577-5395

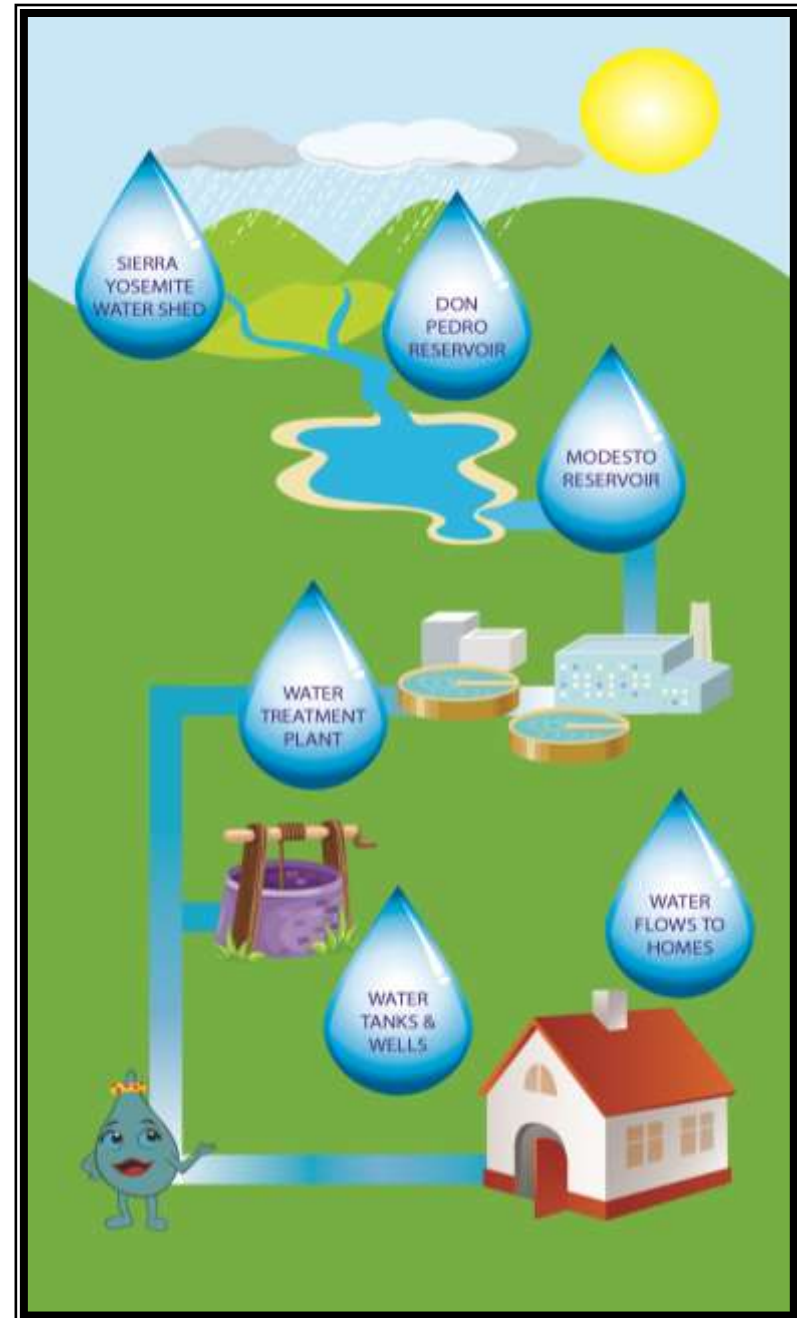
Where does my water come from?

The City currently operates 77 wells, 10 tanks, and 181 sampling points.

Until 1995, our customers received all of their water from wells. In order to continue to deliver clean, dependable water, the City partnered with the Modesto Irrigation District (MID) to construct a surface water treatment plant at Modesto Reservoir. The treatment process produces water that meets state and federal drinking water standards. In 2018, approximately 38% of the water supplied was from groundwater wells and 62% was surface water.

Surface Water Treatment Process:

- Water from Modesto Reservoir flows into the water treatment plant where ozone is added for disinfection.
- Liquid alum and polymers are mixed rapidly into the disinfected water to attract suspended particles and cause them to come together into a substance known as floc.
- The water flows into sedimentation basins to allow the floc to settle before the water goes to the filters.
- The water passes through an anthracite filter where any remaining floc is removed.
- Chlorine is added to the water as the final disinfectant.
- Lime and carbon dioxide are added to prevent corrosion of water pipes.
- Treated water flows to Modesto and into two 5 Million gallon tanks. From the tanks, it is pumped out as needed into the distribution system where it mixes with groundwater. It is then delivered to homes via service lines and you get to drink it, cook with it, bathe with it, etc.



WATER SERVICES DIVISION

WATER QUALITY INFORMATION



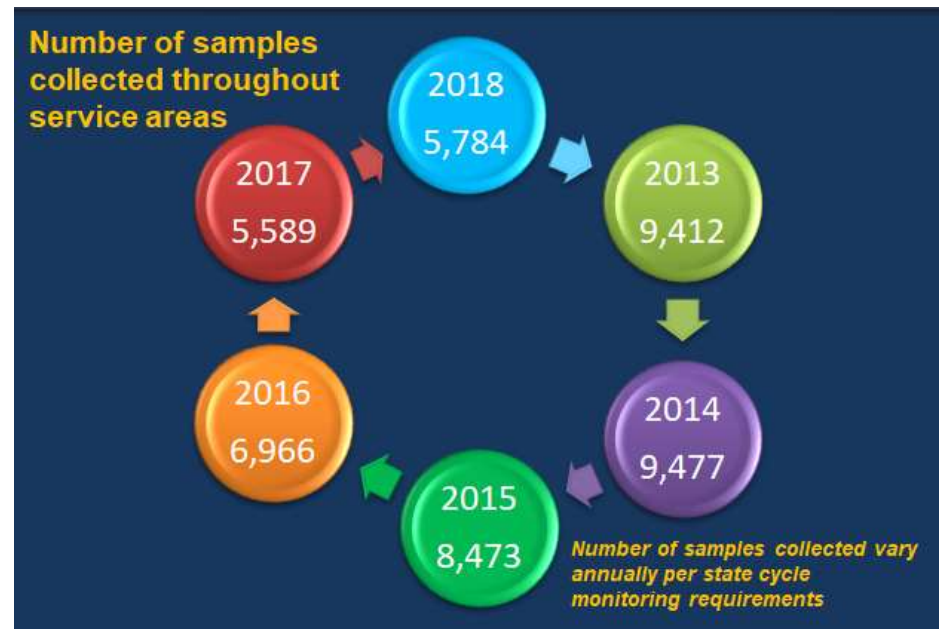
Water Quality Sampling

The City of Modesto takes pride in the quality of potable water it provides to its customers. To ensure the highest water quality, water is tested from a well and distribution points throughout the service area. On an annual basis, City staff collects an average of 7,506 water samples and test for approximately 170 chemicals as required by the State.

For more detailed information (refer to pages 9-11), we have provided you with a table showing what type of chemicals have been found in the water, the results of those samples, and the State MCLs (Maximum Contaminant Levels).

Cross Connection Control Program

The purpose of the cross connection control program is to reduce the hazards of contamination to the public water system by identifying actual and potential cross connections and taking action to protect the system from these hazards. This is accomplished by installing approved backflow prevention assemblies where hazards are identified; or ensuring that water-using equipment on the premises is installed in accordance with plumbing code requirements and good practice. To keep your drinking water safe, the City's Cross-Connection specialist surveys the system to ensure compliance with cross connection/backflow requirements. The City of Modesto makes sure all primary external backflow prevention assemblies are tested annually. In 2018, there were 4 assemblies tested throughout the service area.



Water Distribution System Flushing

Flushing of the water distribution system is performed by City of Modesto crews to clear out the buildup of naturally occurring particles within the distribution system which can cause common water quality problems like taste, odor, and discoloration. These fine particles, which do not pose a health concern, settle in pipes during periods of low flow velocities. When water consumption increases, the higher velocities pick up the settled particles, causing the water to become cloudy and appear stained or dirty. Usually these high velocities are seasonal and occur during summer months. As consumption rises, more of the off-season accumulation is picked up from the pipes and may enter the customer's tap.

Prior to the flushing event, customers will be notified via door hangers or flyers 48 hours in advance. You should also watch for road signs in your neighborhood.

During flushing events, properties in the immediate area of the water main flushing may experience low water pressure, sand, and discoloration of water. It is recommended that you avoid running taps and using washing machines or dishwashers during time of flushing.

If you experience discolored water, we ask that *after the flushing event has been completed*, you flush your water service by opening your outdoor hose bib for several minutes as needed until the water clears. Afterwards, flush cold water faucets inside your home. Do not run a tap that has a water filter connected to it as sedimentation may clog the filter. If discolored water still continues, contact the Water Division.

City of Modesto is determined to dispose or reuse the flushed water in a method that is environmentally sound and improves drinking water quality in the process.

For more information, contact the Utilities Department, Water Services Division: 209-342-2246

USEPA and the State Water Resources Control Board

In order to ensure that tap water is safe to drink, the U.S. Environmental Protection Agency (USEPA) and the State Water Resources Control Board prescribe regulations that limit the amount of certain contaminants in water provided by public water systems. Water Board regulations also establish limits for contaminants in bottled water that provide the same protection for public health.

Water taste can vary within the water system depending on the age of pipes, minerals in the water, time of year, the percentage of well water mixing with surface water and the process of disinfection.

The State Water Resources Control Board requires us to inform you that:

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 USEPA's Safe Drinking Water hotline (1-800-426-4791).

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. USEPA/Centers for Disease Control (CDC) guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the Safe Drinking Water Hotline 1-800-426-4791.

CONTAMINANT INFORMATION

Possible Causes of Contamination

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, that 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 storm water runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.
- **Pesticides and Herbicides**, which may come from a variety of sources such as agriculture, urban storm water 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 storm water runoff, agricultural application, and septic systems.
- **Radioactive Contaminants**, that can be naturally-occurring or be the result of oil and gas production or mining activities.

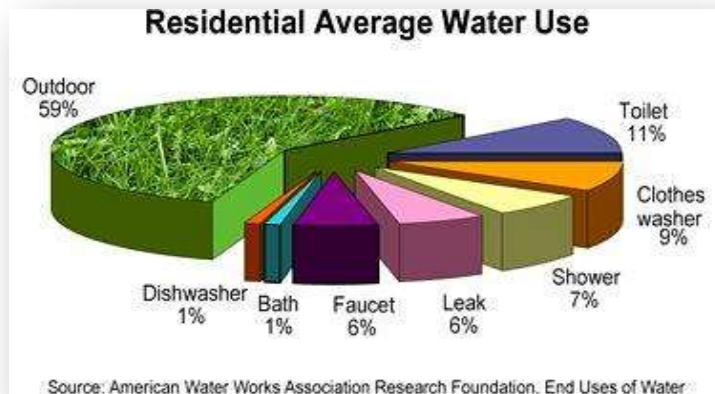
More information about contaminants and potential health effects can be obtained by calling the EPA's Safe Drinking Water Hotline at (800) 426-4791.



WATER CONSERVATION

Water is a critical part of California's way of life. Our economy, our environment and our day-to-day lifestyle need water to flourish. The good news...it's easy to keep saving! There are lots of simple ways to reduce the amount of water that we use at home, both inside and outside.

Water Conservation Tips



- Check household faucets for leaks. A faucet with even a slow drip can waste 10 to 25 gallons of water. Just think, 15 drips per minute add up to almost 3 gallons of water wasted per day.
- Keep showers to 5 minutes or less in length. A five-minute shower can use 10 to 25 gallons of water.
- Use a broom to sweep your driveway, garage, or sidewalk instead of using water.
- Water your lawn in the evening or in the early morning to avoid evaporation.
- Make seasonal adjustments to your irrigation timers.
- Use water only when you need it. Don't leave water running; be sure to turn it off when you are finished.
- Do not water outdoors during and up to 48 hours following measureable rain.

Fun Facts

- Without water, the earth would look like the moon.
- All living things need water to live. People can live several weeks without food, but only a few days without water.
- Water makes up 83% of our blood, 70% of our brain, and 90% of our lungs. Overall, our bodies are 70% water.
- A tomato is about 95% water. An apple, a pineapple, and an ear of corn are each 80% water.
- Much more fresh water is stored under the ground in aquifers than on the earth's surface.
- While the daily recommended amount of water is eight cups per day, not all of this water must be consumed in the liquid form. Nearly every food or drink item provides some water to the body.

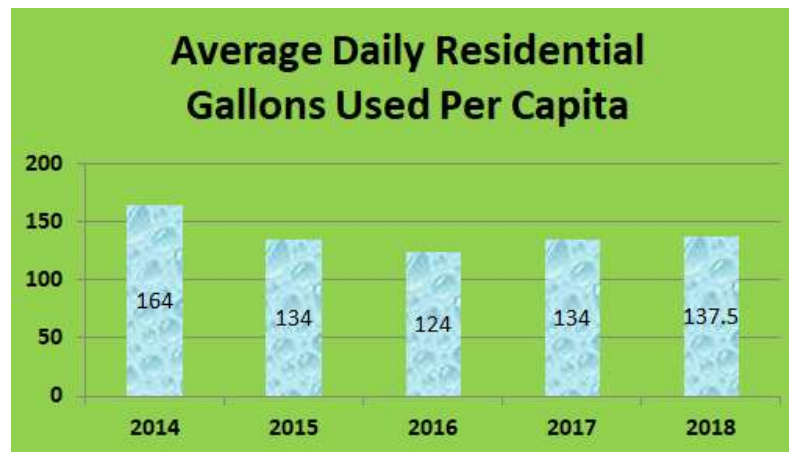


List of Rebate Programs

- Turf Replacement
- Toilet
- Washing Machine
- Smart Irrigation Controllers
- Rain Barrels
- Drip Irrigation
- High Efficiency Sprinkler Nozzles



The City of Modesto has programs to assist customers with Water Conservation including the *Free* home water wise consultations. Customers can call and schedule an appointment for a trained conservation specialist to come to their home, analyze their outdoor water use and assist them to conserve water by demonstrating how to read the meter, reset watering timers, and check for leaks.



For more information, please go to the link: <http://www.modestogov.com/905/Water-Conservation>

Table Introduction

Definition of Terms:

AL (action level): the concentration of a contaminant that, if exceeded, triggers treatment or other requirements that a water system must follow.

MCL (maximum contaminant level): the highest level of a contaminant that is allowed in drinking water. Primary MCLs are set as close to the PHGs or MCLGs as feasible using the best available treatment technology. Secondary MCLs are set to protect the odor, taste and appearance of drinking water.

MCLG (maximum contaminant level goal): the level of a contaminant in drinking water below which there is no known/expected health risk. MCLGs allow for a margin of safety.

MRDL (maximum residual disinfectant level): the highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

MRDLG (maximum residual disinfectant level goal): the level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLG's do not reflect the benefits of the use of disinfectants to control microbial contamination.

PHG (Public Health Goal): The level of a contaminant in drinking water below which there is no known or expected risk to health. PHGs are set by the California Environmental Protection Agency's Office of Environmental Health Hazard Assessment without regard to cost or available detection and treatment technologies.

TT (treatment technique): a required process intended to reduce the level of a contaminant in drinking water.

NL (notification level): A health based advisory level for an unregulated contaminant in drinking water. It is used by Department of Drinking Water to provide guidance to drinking water systems.

Comparative Figures for Interpretation

| 1 PPM | 1 PPB | 1 PPT |
|--------------------------|--------------------------|--|
| 1 second in 11.5 days | 1 second in 31.7 years | 1 second in 317.1 centuries |
| 1 penny out of \$10,000 | 1 penny of \$10,000,000 | 1 penny of \$10,000,000,000 |
| 1 inch of 15.8 miles | 1 inch of 15,782.8 miles | 1 inch of 657.6 trips around the equator |
| 1 minute in 1.9 years | 1 minute in 19 centuries | 1 minute in 1,900 millenniums |
| 1 ounce in 62,500 pounds | 1 ounce in 31,250 tons | 1 ounce in 31,250,000 tons |

Abbreviations:

DLR: detection limit for reporting

cfu/ml: colony forming units

mg/L: number of milligrams in one liter of water

n/a: not applicable

NTU: nephelometric turbidity units

pCi/L: picocuries per liter (a measure of radiation)

ppb: parts per billion

ppm: parts per million

ppt: parts per trillion

TT: treatment technique

ND: non-detect

µS/cm: micro-siemens/cm

<: less than

>: greater than

LRAA: locational Running Annual Average

Source: American Water Works Association Research Foundation

2018 Water Quality Table

Regulated Contaminants with Primary MCLs

| Inorganic Chemicals | Units | MCL | PHG | DLR | AVG | Range | Year Sampled | Violation | TYPICAL SOURCE OF CONTAMINANTS |
|--------------------------|-------|-----|-------|------|-------|--------|--------------|-----------|--|
| Aluminum | ppm | 1 | 0.6 | 0.05 | <0.01 | 0-0.06 | 2018 | No | Erosion of natural deposits; runoff from orchards; glass and electronics production wastes |
| Arsenic | ppb | 10 | 0.004 | 2 | 3.0 | 0-7.5 | 2018 | No | Erosion of natural deposits; runoff from orchards; glass and electronics production wastes |
| Barium | ppm | 1 | 2 | 0.1 | 0.11 | 0-0.24 | 2018 | No | Discharge of oil drilling wastes and from metal refineries; erosion of natural deposits |
| Fluoride | ppm | 2 | 1 | 0.1 | 0.01 | 0-0.12 | 2018 | No | Erosion of natural deposits; water additive that promotes strong teeth; discharge from fertilizer and aluminum factories |
| Nitrate (as Nitrogen, N) | ppm | 10 | 10 | 0.4 | 3.59 | 0-9.06 | 2018 | No | Runoff and leaching from fertilizer use; leaching from septic tanks and sewage; erosion of natural deposits |
| Nitrite (as Nitrogen, N) | ppm | 1 | 1 | 0.05 | <0.01 | 0-0.95 | 2018 | No | Runoff and leaching from fertilizer use; leaching from septic tanks and sewage; erosion of natural deposits |

| Volatile Organic Chemicals | Units | MCL | PHG | DLR | AVG | Range | Year Sampled | Violation | TYPICAL SOURCE OF CONTAMINANTS |
|----------------------------|-------|-----|------|-----|-----|-------|--------------|-----------|---|
| Tetrachloroethylene (PCE) | ppb | 5 | 0.06 | 0.5 | 0.2 | 0-3.3 | 2018 | No | Discharge from factories, dry cleaners and auto shops (metal degreaser) |
| Trichloroethylene (TCE) | ppb | 5 | 1.7 | 0.5 | 0.1 | 0-2.0 | 2018 | No | Discharge from metal degreasing sites and other factories |

| Synthetic Organic Chemicals/Herbicides and Pesticides | Units | MCL | PHG | DLR | AVG | Range | Year Sampled | Violation | TYPICAL SOURCE OF CONTAMINANTS |
|---|-------|-----|-----|-----|-----|-------|--------------|-----------|---|
| Dibromochloropropane (DBCP) | ppt | 200 | 1.7 | 10 | 4.9 | 0-76 | 2018 | No | Banned nematocide that may still be present in soils due to runoff/leaching from former use on soybeans, cotton, vineyards, tomatoes and tree fruit |

Special Notifications:

While your drinking water meets the federal and state standard for arsenic, it does contain low levels of arsenic. The arsenic standard balances the current understanding of arsenic's possible health effects against the costs of removing arsenic from drinking water. The U.S. Environmental Protection Agency continues to research the health effects of low levels of arsenic, which is a mineral known to cause cancer in humans at high concentrations and is linked to other health effects such as skin damage and circulatory problems.

Nitrate in drinking water at levels above 45 mg/L is a health risk for infants of less than six months of age. Such nitrate levels in drinking water can interfere with the capacity of the infant's blood to carry oxygen, resulting in a serious illness; symptoms include shortness of breath and blueness of the skin. Nitrate levels above 45 mg/L may also affect the ability of the blood to carry oxygen in other individuals, such as pregnant women and those with certain specific enzyme deficiencies. If you are caring for an infant, or you are pregnant, you should ask advice from your health care provider.

Regulated Contaminants with Primary MCLs

| Radiological | Units | MCL | PHG (MCLG) | DLR | AVG | Range | Year Sampled | Violation | TYPICAL SOURCE OF CONTAMINANTS |
|--------------|-------|-----|------------|-----|-----|--------|--------------|-----------|--------------------------------|
| Gross Alpha | pCi/L | 15 | (0) | 3 | 2.6 | 0-11.9 | 2018 | No | Erosion of natural deposits |
| Uranium | pCi/L | 20 | 0.43 | 1 | 5.2 | 0-24 | 2018 | No | Erosion of natural deposits |

| Bacteriological | Units | MCL | PHG | DLR | Highest Month | Year Sampled | Violation | TYPICAL SOURCE OF CONTAMINANTS | Bacteriological |
|-------------------------|----------------|-----------------|-----|-----|---------------|--------------|-----------|--------------------------------------|-------------------------|
| Total Coliform Bacteria | Present/Absent | >5.0% per month | (0) | n/a | 0.6% | 2018 | No | Naturally present in the environment | Total Coliform Bacteria |

| Bacteriological | Units | MCL | PHG | DLR | AVG | Range | Year Sampled | Violation | TYPICAL SOURCE OF CONTAMINANTS |
|---------------------------|--------|-----|-----|-----|-----|-------|--------------|-----------|--------------------------------|
| Heterotrophic Plate Count | cfu/ml | n/a | n/a | n/a | 1.6 | 0-40 | 2018 | No | n/a |

Disinfection Byproducts and Disinfection Residuals

| Disinfection Byproducts | Units | MCL | PHG | DLR | LRAA | Range | Year Sampled | Violation | TYPICAL SOURCE OF CONTAMINANTS |
|-------------------------|-------|-----|-----|-----|------|--------|--------------|-----------|---|
| Total Haloacetic Acids | ppb | 60 | n/a | n/a | 31.4 | 0-43.8 | 2018 | No | By-product of drinking water disinfection |
| Trihalomethanes (Total) | ppb | 80 | n/a | n/a | 49.0 | 0-71.5 | 2018 | No | By-product of drinking water disinfection |

| Disinfectant Residual | Units | MRDL | MRDLG | DLR | AVG | Range | Year Sampled | Violation | TYPICAL SOURCE OF CONTAMINANTS |
|-----------------------|-------|------|-------|-----|------|-----------|--------------|-----------|---|
| Chlorine | mg/L | 4 | 4 | n/a | 0.87 | 0.01-2.00 | 2018 | No | Drinking water disinfectant added for treatment |

At The Tap Contaminants

| Metals | Units | Action Level | PHG | DLR | # OF Samples | 90 th Percentile | Year Sampled | # Samples > Action Limits | TYPICAL SOURCE OF CONTAMINANTS |
|--------|-------|--------------|-----|------|--------------|-----------------------------|--------------|---------------------------|---|
| Copper | ppm | 1.3 | 0.3 | 0.05 | 52 | 0.16 | 2018 | 0 | Internal corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives |
| Lead | ppb | 15 | 0.2 | 5 | 52 | ND | 2018 | 1 | Internal corrosion of household water plumbing systems; discharges from industrial manufacturers; erosion of natural deposits |

Regulated Contaminants with Secondary MCLs

| Inorganic Chemicals | Units | Standard | PHG | DLR | AVG | Range | Year Sampled | Violation | TYPICAL SOURCE OF CONTAMINANTS |
|------------------------|-------|----------|-----|-----|-----|----------|--------------|-----------|---|
| Chloride | ppm | 500 | n/a | n/a | 114 | 6-400 | 2018 | No | Runoff and leaching from natural deposits; seawater influence |
| Color | units | 15 | n/a | n/a | <1 | 0-5 | 2018 | No | Naturally-occurring organic materials |
| Specific Conductance | uS/cm | 1600 | n/a | n/a | 672 | 140-1400 | 2018 | No | Substances that form ions when in water; seawater influence |
| Sulfate | ppm | 500 | n/a | n/a | 14 | 0-32 | 2018 | No | Runoff/leaching from natural deposits; industrial wastes |
| Total Dissolved Solids | ppm | 1000 | n/a | n/a | 388 | 36-1200 | 2018 | No | Runoff/leaching from natural deposits |

Additional Inorganic Chemicals

| Inorganic Chemicals | Units | MCL | PHG | DLR | AVG | Range | Year Sampled | Violation | TYPICAL SOURCE OF CONTAMINANTS |
|----------------------------------|-------|-----|-----|-----|-----|---------|--------------|-----------|--------------------------------|
| Hardness (as CaCO ₃) | ppm | n/a | n/a | n/a | 194 | 47-326 | 2018 | No | n/a |
| pH | units | n/a | n/a | n/a | 7.8 | 7.5-8.1 | 2018 | No | n/a |
| Sodium | ppm | n/a | n/a | n/a | 60 | 9-160 | 2018 | No | n/a |

UCMR3 (Unregulated Contaminants Monitoring Rule)

| Contaminants | Units | Notification Level | MRDLG | Reporting Limit | AVG | Range | Year Sampled | Violation | TYPICAL SOURCE OF CONTAMINANTS |
|------------------------|-------|--------------------|-------|-----------------|-------|--------|--------------|-----------|--|
| Chlorate | ppb | 800 | 800 | 20 | 132 | 0-390 | 2013 | No | n/a |
| Hexavalent Chromium | ppb | n/a | n/a | 0.03 | 3 | 0-7 | 2013 | No | n/a |
| Total Chromium | ppb | n/a | 50 | 0.02 | 3 | 0-7.5 | 2013 | No | n/a |
| Molybdenum | ppb | n/a | n/a | 1 | 1.4 | 0-9.7 | 2013 | No | n/a |
| Strontium | ppb | n/a | n/a | 0.3 | 606 | 0-1800 | 2013 | No | n/a |
| Vanadium | ppb | 50 | n/a | 0.2 | 18 | 1-54 | 2013 | No | n/a |
| 1,2-Dichloroethane | ppb | n/a | 0.4 | 0.03 | 0.001 | 0-0.06 | 2013 | No | Discharge from industrial chemical factories |
| 1,2,3-Trichloropropane | ppb | 0.005 | n/a | 0.03 | 0.004 | 0-0.14 | 2013 | No | n/a |
| 1,4-Dioxane | ppb | 1 | n/a | 0.07 | 0.006 | 0-0.17 | 2013 | No | n/a |
| Chlorodifluoromethane | ppb | n/a | n/a | 0.08 | 0.133 | 0-6.6 | 2013 | No | n/a |

Unregulated Contaminants

| CONTAMINANT | UNITS | Notification Level | MRDLG | Reporting Limit | AVG | RANGE | YEAR SAMPLED | VIOLATION | TYPICAL SOURCE OF CONTAMINANTS |
|------------------------|-------|--------------------|-------|-----------------|-----|-------|--------------|-----------|--------------------------------|
| 1,2,3-Trichloropropane | ppt | 5.0 | n/a | 0.7 | 0.5 | 0-14 | 2018 | No | n/a |

Lead Sampling at Schools

On January 1, 2018, AB 746 was enacted into law which required the City of Modesto to test 67 public schools (K – 12), constructed or modernized before January 1, 2010, for lead level by July 1, 2019.

Lead sampling has been completed at 67 schools from various school districts.

For further information about Lead in Schools please visit the State Water Resource Control Board link provided below:

<https://www.arcgis.com/apps/MapJournal/index.html?appid=9d17731cae2c4452957fadc5d8ee2d75>