Tucson Water
P.O. Box 27210
Tucson, AZ
85726-7210

## Thunderhead Ranch System 10-179

# 2010 Annual Water Quality Report

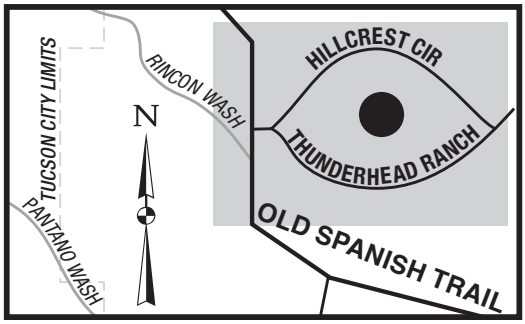
City of Tucson Water Department
Water Quality and Operations Division

**During 2010, Tucson Water ensured that your drinking water met all drinking water standards.**

This Annual Water Quality Report provides information on your drinking water. The United States Environmental Protection Agency (USEPA) requires that all drinking water suppliers provide a water quality report to their customers on an annual basis. This report also serves as a reference with important information on the quality of water and with contacts and phone numbers you may need from time to time.

### Source Water Assessment Program (SWAP)

The Arizona Department of Environmental Quality (ADEQ) has completed a source water assessment of this system which evaluates the risk of contamination from human activities. The water sources for this system are categorized as "low risk of contamination from human activities."




**Thunderhead Ranch** is a small subdivision west of Old Spanish Trail and about one and a half miles south of Irvington Road. It has about 57 services supplying about 170 persons with water from two wells, G-006A and G-009A. G-009A is the primary well and has been operational since 2003. This system was acquired by Tucson Water in 1997. An aeration system to elevate pH and thus control corrosion was designed, installed, and has been in operation since June of 2005.

## Were There Any Contaminants Detected In My Drinking Water?

Tucson Water regularly samples the drinking water that is delivered to you. Much of this testing is required by drinking water regulations.

The Detected Contaminants Table on page 3 lists all contaminants that were detected in the required drinking water monitoring. Monitoring results for the period of January 1, 2010 to December 31, 2010, or from the most recent period, are included in the table. Certain contaminants are monitored less than once a year because the concentrations of these contaminants are not expected to vary significantly from year to year, or the system is not considered vulnerable to this type of contamination. If the risk is low, a waiver will be granted and the effect is a reduction in monitoring frequency. This reduction in monitoring saves public water systems' money without affecting public safety.

In most cases, the minimum detectable level of a contaminant is well below the USEPA regulatory limit for that contaminant. To compare the detected amount with the amount allowed by the USEPA, refer to the Maximum Contaminant Level (MCL) column in the table. The vast majority of regulated contaminants were not detectable in drinking water delivered by Tucson Water. The non-detected results were not included in the table. For a complete list of all USEPA regulated contaminants contact the USEPA at 1-800-426-4791 or visit the USEPA website at **epa.gov/safewater/mcl.html#mcls**.

## How is my drinking water treated?

The ground water delivered by Tucson Water meets all drinking water standards without treatment. However, approximately 0.8 to 1.2 parts per million (ppm) of chlorine residual is maintained in the drinking water supply to provide assurance that water delivered to customers will remain free of microbiological contamination. This also ensures that the water meets microbiological drinking water standards from the time it is pumped from the ground until it reaches the customer's tap.

## Do I need to take special precautions?

While the Safe Drinking Water Act regulations are intended to protect consumers throughout their lifetime, some people may be more vulnerable to infections from drinking water than the general population. These "at-risk" populations include immuno-compromised persons such as persons with cancer undergoing chemotherapy, people who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, and in some cases, elderly people and infants. These people should seek advice about drinking water from their health care providers. USEPA/Center for Disease Control (CDC) guidelines on appropriate means to lessen the risk of infection by cryptosporidium and other microbial contaminants are available from the USEPA's Safe Drinking Water hotline.

## Why Are There Contaminants In My Drinking Water?

All drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. Tucson's ground water contains dissolved minerals and organic compounds which have been leached from rocks, sediments, and plant materials through which the water travels. One would expect to find beneficial minerals such as calcium and magnesium, harmless minerals such as chloride, bicarbonate, and sulfate, and metals such as iron, copper, arsenic, and lead, which may be either beneficial or harmless at low concentrations, but harmful at high concentrations. In addition to these naturally occurring contaminants, ground water may contain contaminants resulting from human, industrial, or domestic activities. For this reason, water utilities must currently monitor for approximately 90 regulated and 25 unregulated contaminants.

The following language is required by the USEPA to appear in this report, some of which may not be applicable to deep ground water wells, the source of this water supply:

Contaminants that may be present in a source water can include:

- Microbial contaminants, such as viruses and bacteria, which may come from sewage, agricultural livestock, 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 may come from 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 be the result of oil and gas production and mining activities.

In order to ensure that tap water is safe to drink, USEPA regulations 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. Bottled water may come from either a surface water source or ground water source, and may be treated minimally or extensively. For information on the quality of your bottled water, contact the water bottling company.

## Detected Contaminants Table

| Contaminant | Analysis Date | Maximum Result | Range | MCL | MCLG | Major Sources of Contaminant |
|---|---|---|---|---|---|---|
| **Inorganics** | | | | | | |
| Barium | 2010 | 0.032 ppm | 0.029 – 0.037 ppm | 2 ppm | 2 ppm | Natural deposits |
| Fluoride | 2010 | 0.18 ppm | 0.17 – 0.21 ppm | 4 ppm | 4 ppm | Natural deposits |
| Nitrate (as N) | 2010 | 0.94 ppm | 0.94 – 0.94 ppm | 10 ppm | 10 ppm | Natural deposits, septic tanks, agriculture, sewage |
| Sodium | 2010 | 13 ppm | 13 – 13 ppm | None | None | Natural deposits |
| **Radioactive chemicals** | | | | | | |
| Adjusted Gross Alpha | 2010 | 0.9 pCi/l | <1.0 – 0.9 pCi/l | 15 pCi/l | 0 pCi/l | Natural deposits |
| Uranium | 2010 | 3.1 ppb | 3.1 – 3.1 ppb | 30 ppb | None | Natural deposits |
| **Total Trihalomethanes (TTHMs)** | | | | | | |
| TTHMs Running Annual Average | 2010 | 5.1 ppb | NA | 80 ppb | None | By-product of chlorination |

| Contaminant | Analysis Date | No. of Samples above the Action Level | 90th Percentile Value | Action Level | MCLG | Major Sources of Contaminant |
|---|---|---|---|---|---|---|
| **Lead and Copper in Standing Water Samples** | | | | | | |
| Lead | 2010 | None | 2.7 ppb | 15 ppb | 0 ppb | Corrosion of household plumbing systems |
| Copper | 2010 | None | 0.16 ppm | 1.3 ppm | 1.3 ppm | Corrosion of household plumbing systems |

| Contaminant | Year Sampled | Annual Running Average | Monthly Average Range | MRDL | MCLG | Major Sources of Contaminant |
|---|---|---|---|---|---|---|
| **Maximum Residual Disinfection Level (MRDL)** | | | | | | |
| Chlorine | 2010 | 1.05 ppm | 0.49 – 2.88 ppm | 4 ppm | 4 ppm | Disinfection additive used to control microbes |

### DRINKING WATER TERMS AND DEFINITIONS

*Action level*. The concentration of a contaminant which, if exceeded, triggers a treatment or other requirement which a water system must follow.

*Maximum Contaminant Level (MCL)*. The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCL goal as feasible using the best available treatment technology. If a contaminant is believed to cause health concerns in humans, then the MCL is set as close as practical to zero and at an acceptable level of risk. Generally, the maximum acceptable risk of cancer is 1 in 10,000 with 70 years of exposure.

*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 a 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 contaminants.

*Parts Per Billion (ppb)*. Some constituents in water are measured in very small units. One ppb equals one microgram per liter. For example, one part per billion equals 2 drops of water in a 15,000-gallon backyard swimming pool, one second of time in 31.7 years, or the first 16 inches of a trip to the moon.

*Parts Per Million (ppm)*. One ppm equals one milligram per liter or 1000 times more than a ppb. One part per million equals a 1/4 cup of water in a typical 15,000-gallon backyard swimming pool or one second of time in 11.6 days.

*Picocurie Per Liter (pCi/l)*. The quantity of radioactive material in one liter which produces 2.22 nuclear disintegrations per minute.

SafetyAlertGPC offers free regional emergency and weather alert notification for greater Pima County residents. It allows you to be contacted quickly if there is a waterborne emergency. For information or to sign up, go to www.safetyalertgpc.com.

## Detailed Information on Detected Contaminants

***Barium*** occurs naturally at very low concentrations in our ground water.

***Fluoride*** is an important naturally-occurring mineral that helps to form healthy teeth and bones. A concentration of 1 ppm is considered optimum. At concentrations above 2 ppm, fluoride can cause mild discoloration of teeth, and exposure at above the MCL of 4 ppm can cause both severe discoloration of teeth and over many years of exposure, bone disease.

***Nitrate*** is a form of nitrogen and an important plant nutrient. Nitrate in drinking water at levels above 10 ppm is a health risk for infants of less than six months of age. High nitrate levels in drinking water can cause blue baby syndrome. Tucson Water performs extra monitoring on wells high in nitrate for extra assurance that action can be taken when approaching the MCL.

***Sodium*** is the sixth most abundant element on Earth and is widely distributed in soils, plants, water, and food. A maximum of 2300 mg/day dietary sodium has been proposed by several government and health agencies. Drinking water containing between 30 and 60 ppm would contribute only 2.5% to 5% of the dietary maximum if tap water consumption is 2 L/day. Currently, there is no MCL for sodium in drinking water. The recommended USEPA guidance level for individuals on a low sodium diet (500 mg/day) is 20 ppm in drinking water.

***Adjusted Gross Alpha*** is a measure of radioactivity due to naturally occurring minerals in ground water. The MCL for gross alpha radioactivity is set at 15 picocuries per liter (pCi/L). This excludes the radioactivity contributed by either radon or uranium.

***Uranium*** is a heavy metal, which is highly toxic and radioactive. The MCL for uranium is 30 ppb.

***Total Trihalomethanes (TTHMs)*** are formed when chlorine combines with naturally-occurring material in water. Because the level of organic matter in our ground water is extremely low, these compounds are found at very low concentrations.

***Lead and Copper*** are naturally occurring metals which are generally found at very low levels in source waters. 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. Tucson Water is responsible for providing high quality drinking water, but can not 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.

In 2004, Tucson Water conducted an expanded lead and copper-monitoring program in the Thunderhead Ranch system. The results showed that two samples out of 55 collected exceeded the 15 ppb action level for lead and two out of the 55 samples exceeded the 1.3 ppm action level for copper. These monitoring results were reported to Thunderhead Ranch system customers in a September 24, 2004 letter.

The expanded monitoring results showed that the water supplied by Thunderhead Ranch system wells increased the risk of excessive lead and copper found in water that is in contact with some household pipes for six hours or more. Tucson Water professionals determined that this risk could be significantly reduced by aerating the water to remove excess carbon dioxide. Aeration increases water's pH and reduces the potential for corrosion. This aeration plan was approved by ADEQ and the aeration system was designed, installed, and began operation in June 2005. Monthly pH during 2010 was at the target range of 7.69-7.89 Standard Units (S.U.).

Tucson Water conducted the most recent lead and copper-monitoring program during July of 2010. The 2010 monitoring results were substantially lower than 2004 results: the 2010 lead 90th percentile of 2.7 ppb was considerably lower than 15 ppb action level and the 2010 copper 90th percentile level of 0.16 ppm was considerably lower than the 1.3 ppm action level.

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 from the Safe Drinking Water Hotline at **epa.gov/safewater/lead**.

***Total Chlorine Residual*** – Approximately 0.8 to 1.2 ppm of chlorine is maintained in the drinking water supply to provide assurance that water delivered to customers will remain free of microbiological contamination. This also ensures that the water meets microbiological drinking water standards from the time it is pumped from the ground until it reaches the customer's tap. Total Chlorine Residual is measured from sample stations where the bacteriological samples are collected monthly. The Total Annual Chlorine Residual is calculated using the monthly average chlorine for the past 12 months.

## For More Information

Contact Mohsen Belyani with the Water Quality & Operations Division for more information about this report at (520) 791-2544 or mohsen.belyani@tucsonaz.gov.

**Tucson Water Contact Information**

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|---|---|
| Public Information | (520) 791-4331 |
| Water Quality & Operations Division | (520) 791-2544 |
| Customer Service/Billing | (520) 791-3242 |
| 24-Hour Emergency | (520) 791-4133 |
| Website | www.tucsonaz.gov/water |

**USEPA**

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|---|---|
| Safe Drinking Water Hotline | 1-800-426-4791 |
| Website | www.epa.gov/safewater |

*Si usted desea este documento escrito en español, por favor, llame al* *(520) 791-4331*

*City of Tucson TTY#* *(520) 791-2639*