BWA Drinking Water Quality Report

2009 Data

BWA Continues to Receive TOP Award Recognition

The Benbrook Water Authority has received its fifth Texas Optimization Program (TOP) award from the Texas Commission on Environmental Quality (TCEQ). This award recognizes water treatment plants that voluntarily work to exceed the minimum requirements set by the State of Texas for water clarity. The TOP award is one of the highest awards a water system can receive from the TCEQ. There are 435 water treatment plants in Texas and the BWA Water Treatment Plant is one of only thirteen plants to receive this award. A plant must continuously meet the TOP criteria for six consecutive months to receive the award, and must continue to meet the criteria in order to maintain the TOP recognition. BWA received its first TOP award in November 2007.

TCEQ Representative Jack Shultz presented the award to the BWA at its regular Board meeting on April 20, 2010. Mr. Shultz commended the BWA for continuing to meet the stringent criteria for the TOP award and producing water that exceeds the quality standards of bottled water and the more stringent quality standards for public drinking water systems.

Proper Disposal of Pharmaceuticals

Unused medications and pharmaceuticals like over-the-counter pills, ointments, sprays, drops and supplements, belong in a safe collection facility, not in our waterways and water treatment system. Antibiotics, antidepressants, birth control pills, seizure medication, cancer treatments, painkillers, tranquilizers and cholesterol-lowering drugs have been detected in Texas water sources.

The Texas Commission on Environmental quality (TCEQ) will be studying this situation and devising a plan to reduce contaminants. As they proceed, you can help prevent contamination of our wastewater system and water supply, and potential threats to fish and water-dwellers by not flushing drugs down the toilet.

Research demonstrates that exposure to low levels of human medications for a period of time has altered physical characteristics and behavior of fish and other water-dwelling animals. The Texas Section of the American Water Works Association has launched a website about this issue—*www.dontflushdrugs.org*. There are many sources of medications in our water system, including manufacturing and medical facilities, but households also contribute, and conventional wastewater treatment facilities cannot remove these substances completely.

There are several ways to properly dispose of pharmaceuticals. One is to check with your pharmacy. Many of them will dispose of unused medications for you. You can also drop drugs off at an authorized collection facility. Benbrook has an agreement with the City of Fort Worth that allows Benbrook residents to take hazardous materials, including pharmaceuticals, to the Fort Worth environmental collection center (ECC) at 6400 Bridge Street in Fort Worth. For directions to the ECC and its hours of operation, please call 817-392-3279.

It is also possible to prepare drugs for disposal yourself. It does take a little time, but you can disburse and conceal unused medications in other substances and place them in your regular solid waste collection. For detailed instructions on this process, visit *www.dontflushdrugs.org* and follow all applicable steps.

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The Treatment Process

1. **Reservoirs**: Benbrook water comes primarily from Benbrook Lake.
2. **Raw Water Pump Station**: When high production is needed (over 8.0 MGD) pumps are used to bring water from Benbrook Lake to the treatment plant.
3. **Algae and Taste and Odor Control**: Chemicals are added to the raw water to help reduce algae and taste and odor causing compounds in the water.
4. **Primary Disinfection**: Chlorine Dioxide is added to the raw water to kill bacteria and viruses.
5. **Pre-Sedimentation**: Heavy solids such as sand settle out of the raw water.
6. **Rapid Mixing Chamber**: Chemicals called coagulants are added to the water and cause small particles in the water to adhere to each other.
7. **Flocculation Chambers**: These particles are slowly mixed in a series of chambers that cause them to become large and heavy enough to sink.
8. **Sedimentation Basin**: The large particles travel down a long basin and sink to the bottom in a process called clarification. The particles are collected by a scraper system at the bottom of the basin, then are removed and sent to the sanitary sewer collection system.
9. **Filtration**: The clarified water is treated with a small dose of chlorine then passes through filters which contain 24" of granular activated carbon and 12" of silica sand for ultra fine particle removal and additional taste and odor control.
10. **Final Disinfection**: Chlorine is added to the filtered water to provide final disinfection and residual disinfection that remains in the water all the way to our customers.
11. **Storage**: The finished water is then transferred into 2 storage tanks that can hold up to 3 million gallons. The water is then pumped into the distribution system and to the customer.

About the Following Pages

The pages that follow list all of the federally regulated or monitored constituents which have been found in your drinking water. U.S. EPA requires water systems to test for up to 97 constituents

Abbreviations

NTU—Nephelometric Turbidity Units.

MFL—million fibers per liter (a measure of asbestos).

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 (ug/l).

ppt—parts per trillion, or nanograms per liter.

ppq—parts per quadrillion, or picograms per liter.

Understanding the Tables

The following list explains the terms used in the tables:

MCLG (Maximum Contaminant Level Goal)—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.

MCL (Maximum Contaminant Level)—the highest permissible level of a contaminant in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

MRDL (Maximum Residual Disinfectant Level)—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.

MRDLG (Maximum Residual Disinfectant Level Goal)—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.

Action Level (AL)—the concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.

Turbidity—a measure of the cloudiness of water. We monitor it because it is a good indicator of the effectiveness of our filtration system.

The water quality data table shows the results of our water quality analyses. Every regulated contaminant that we detected in the water, even in the minutest traces, is listed. The table contains the name of each substance, the highest level allowed by regulation (MCL), the ideal goals for public health (MCLG), the amount detected, the usual sources of such contamination, and a key to unit of measurement.

Water Quality Data Table

Inorganic Contaminants

Year (Range)	Contaminant	Average Level	Minimum Level	Maximum Level	MCL	MCLG	Unit of Measure	Source of Contaminant
2005-2008	Barium	0.033	0.004	0.069	2	2	ppm	Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits
2005-2008	Chromium	1.4	0	3.1	100	100	ppb	Discharge from steel and pulp mills; erosion of natural deposits.
2008-2009	Fluoride	0.21	0.15	0.4	4	4	ppm	Erosion of natural deposits; water additive which promotes strong teeth; discharge from fertilizer and aluminum factories
2009	Nitrate	0.06	0	0.17	10	10	ppm	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits
2005	Combined Radium 226 & 228	0.35	0	1.1	5	0	pCi/L	Erosion of natural deposits
2005	Gross beta emitters	3.4	0	5.9	50	0	pCi/L	Decay of natural and man-made deposits
2005	Gross alpha	1.15	0	2.9	15	0	pCi/L	Erosion of natural deposits

Organic Contaminants

Year	Disinfectant	Average Level	Minimum Level	Maximum Level	MCL	MCLG	Unit of Measure	Source of Chemical
2009	Heptachlor epoxide	5.63	0	180	200	0	ppt	Breakdown of heptachlor

Maximum Residual Disinfectant Level

Systems must complete and submit disinfection data on the Surface Water Monthly Operations Report (SWMOR). On the CCR report, the system must provide disinfectant type, minimum, maximum and average levels.

Year	Disinfectant	Average Level	Minimum Level	Maximum Level	MRDL	MRDLG	Unit of Measure	Source of Chemical
2009	Free Chlorine	1.38	.90	2.60	4.0	<4.0	ppm	Disinfectant used to control microbes

Disinfection Byproducts

Year (Range)	Contaminant	Average Level	Minimum Level	Maximum Level	MCL	Unit of Measure	Source of Contaminant
2009	Total Haloacetic Acids	12.5	0	30.2	60	ppb	By-product of drinking water disinfection
2009	Total Trihalomethanes	34.8	0	87.3	80	ppb	By-product of drinking water disinfection

Unregulated Initial Distribution System Evaluation for Disinfection Byproducts –This evaluation is sampling required by EPA to determine the range of total trihalomethane and haloacetic acid in the system for future regulations. The samples are not used for compliance, and may have been collected under non-standard conditions. EPA also requires the data to be reported here.

Year (Range)	Contaminant	Average Level	Minimum Level	Maximum Level	MCL	Unit of Measure	Source of Contaminant
2008	Total Haloacetic Acids	18.6	0	38.3	N/A	ppb	By-product of drinking water disinfection
2008	Total Trihalomethanes	45.9	5.5	88.4	N/A	ppb	By-product of drinking water disinfection

Unregulated Contaminants

Bromoform, chloroform, dichlorobromethane, and dibromochloromethane are disinfection byproducts. There is no maximum contaminant level for these chemicals at the entry point to distribution.

Year (Range)	Contaminant	Average Level	Minimum Level	Maximum Level	Unit of Measure	Source of Contaminant
2009	Chloroform	4.77	4.77	4.77	ppb	Byproduct of drinking water disinfection
2009	Bromoform	3.45	3.45	3.45	ppb	Byproduct of drinking water disinfection
2009	Bromodichloromethane	9.57	9.57	9.57	ppb	Byproduct of drinking water disinfection
2009	Dibromochloromethane	10.84	10.84	10.84	ppb	Byproduct of drinking water disinfection

Lead and Copper

Year (Range)	Contaminant	The 90th Percentile	Number of Sites Exceeding Action Level	Action Level	Unit of Measure	Source of Constituent
2007	Lead	2.6	0	15	ppb	Corrosion of household plumbing systems; erosion of natural deposits
2007	Copper	0.119	0	1.3	ppm	Corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives

Recommended Additional Health Information for Lead

All water systems are required by EPA to report the language below starting with the 2009 CCR to be delivered to you by July of 2010. We are providing this information as a courtesy.

"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. This water supply 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 from the Safe Drinking Water Hotline or at http://www.epa.gov/safewater/lead."

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.

Year	Contaminant	Highest Single Measurement	Lowest Monthly % of Samples Meeting Limits	Turbidity Limits	Unit of Measure	Source of Constituent
2009	Turbidity	.26	100	.30	NTU	Soil Runoff

Total Organic Carbon (TOC) has no health effects. The disinfectant can combine with TOC to form disinfection byproducts. Disinfection is necessary to ensure that water does not have unacceptable levels of pathogens. Byproducts of disinfection include trihalomethanes (THMs) and haloacetic acids (HAA) which are reported elsewhere in this report.

Year	Contaminant	Average Level	Minimum Level	Maximum Level	Unit of Measure	Source of Constituent
2009	Source Water	5.43	5.1	6	ppm	Naturally present in the environment
2009	Drinking Water	2.96	2	3.6	ppm	Naturally present in the environment
2009	Removable Ratio	1.45	1.14	1.89	% removal*	NA

*Removal ration is the percent of TOC removed by the treatment process divided by the percent of TOC required by TCEQ to be removed.

Year 2009	Treated TOC mg/l	Source TOC mg/l	% Removed (1-a/b)x100	Source Water Alkalinity mg/l	Required TOC Removal (%)	C/E
January	2.0	5.6	64.29	104	35	1.84
February	3.0	5.4	44.44	115	35	1.27
March	2.6	5.2	50.00	111	35	1.43
April	3.6	5.3	32.08	125	25	1.28
May	2.96	5.6	47.14	121	25	1.89
June	2.7	5.2	48.08	112	35	1.37
July	3.3	5.5	40.00	93	35	1.14
August	3.2	6.0	46.67	95	35	1.33
September	3.1	5.5	43.64	93	35	1.25
October	3.0	5.1	41.18	92	35	1.18
November	3.2	5.4	40.74	121	25	1.63
December	2.9	5.4	46.30	141	25	1.85
					Sum	17.46
					Average	1.45

Total Coliform—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 more hardy than many disease-causing organisms; therefore, their absence from water is a good indication that the water is microbiologically safe for human consumption.

Year	Contaminant	Highest Monthly Number of Positive Samples	MCL	Unit of Measure	Source of Contaminant
2009	Total Coliform Bacteria	1	*	NTU	Naturally present in the environment.

*Two or more coliform found samples in any single month.

Fecal Coliform – Reported monthly tests found no fecal coliform bacteria.

Secondary and Other Not Regulated Constituents
(No associated adverse health effects)

Year (Range)	Constituent	Average Level	Minimum Level	Maximum Level	Limit	Unit of Measure	Source of Constituent
2005-2008	Aluminum	0.004	0	0.008	.05	ppm	Abundant naturally occurring element
2008-2009	Bicarbonate	210	112	250	NA	ppm	Corrosion of carbonate rocks such as limestone
2005-2008	Calcium	18.8	2	28	NA	ppm	Abundant naturally occurring element
2008-2009	Chloride	17	14	21	300	ppm	Abundant naturally occurring element; used in water purification; byproduct of oil field activity
2005-2008	Copper	0.004	0	0.007	1	ppm	Corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives
2008	Hardness as Ca/Mg	93	65	129	NA	ppm	Naturally occurring calcium and magnesium
2005-2008	Iron	0.032	0	0.054	.3	ppb	Erosion of natural deposits; iron or steel water delivery equipment or facilities
2005-2008	Magnesium	6.2	0	13.5	NA	ppm	Abundant naturally occurring element
2005-2008	Nickel	0.001	0	0.001	NA	ppm	Erosion of natural deposits
2005-2008	Manganese	0.0091	0	0.0235	.05	ppm	Abundant naturally occurring element
2008-2009	pH	8	7.6	8.1	>7.0	units	Measure of corrosivity of water
2005-2009	Sodium	102	30	157	NA	ppm	Erosion of natural deposits; byproduct of oil field activity
2008-2009	Sulfate	52	44	59	300	ppm	Naturally occurring; common industrial byproduct; byproduct of oil field
2008-2009	Total Alkalinity as CaC03	210	112	250	NA	ppm	Naturally occurring soluble mineral salts
2008-2009	Total Dissolved Solids	350	255	385	1000	ppm	Total dissolved mineral constituents in water
2005	Total Hardness as CaC03	81	5	125	NA	ppm	Naturally occurring calcium
2005-2008	Zinc	0.013	0	0.038	5	ppb	Moderately abundant naturally occurring element; used in the metal industry

Health Information for Special Populations

The Texas Commission on Environmental Quality (TCEQ) requires the following statement be printed in all annual water quality reports.

Some people may be more vulnerable to contaminants in drinking water than the general population. Immune-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. EPA/Centers for Disease Control and Prevention (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 (800-426-4791).

Water Sources

The BWA obtains its drinking water from ground and surface water sources. It comes from the following Lake/River/Reservoir/Aquifer: Paluxy, Trinity, Clear Fork Trinity River, and Lake Benbrook. TCEQ completed an assessment of our source water and results indicate that some of our sources are susceptible to certain contaminants. The sampling requirements for our water system are based on this susceptibility and contaminants and previous sample data. Any detection of these contaminants will be found in this report. If we receive or purchase water from another system, their susceptibility is not included in this assessment. For more information on source water assessments and protection efforts at our system, please contact us.

BWA Water Is Safe

Benbrook Water Authority (BWA) is committed to providing residents with a safe and reliable supply of high quality drinking water. As you read this report, you will learn that the water delivered to your tap meets or exceeds all state and federal water quality standards. 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.

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 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 800-426-4791.

Many constituents which are often found in drinking water can cause taste, color, and odor problems. The taste and odor constituents are called secondary constituents and are regulated by the State of Texas, not the EPA. These constituents are not causes for health concerns and are not required to be reported in this document, but may greatly affect the appearance and taste of your water. The Tarrant Regional Water District and BWA continually study the best way to remove these tastes and odors and treat the water.

Learn more about water and water conservation by visiting these Web sites.

Benbrook Water Authority
www.benbrookwater.com

U.S. Environmental Protection Agency
www.epa.gov

Tarrant Regional Water District
www.trwd.com
www.savetarrantwater.com

Texas Water Development Board
www.twdb.state.tx.us
www.savetexaswater.org

Texas Commission on Environmental Quality
www.tceq.state.tx.us

Water Environment Federation
www.wef.org

American Water Works Association
www.awwa.org
www.drinktap.org

Texas Water Resources Institute
http://twri.tamu.edu

Texas Water Conservation Association
www.twca.org

Texas Smartscape
www.txsmartscape.com

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Only Tap Water Delivers℠

This is your annual report on drinking water quality. It details where your water comes from, what it contains, and how that compares with regulatory standards.

This report may seem complex and confusing. There are federal and state requirements on what information is provided and how it is presented. Benbrook water meets or is better than all state and federal water quality standards for protecting public health.

Benbrook Water Authority