



**MEMORIAL VILLAGES WATER AUTHORITY**  
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## **2012 DRINKING WATER QUALITY REPORT**

(Consumer Confidence Report)

**January 1, 2012 to December 31, 2012**

**Public Water Supply I.D. TX1010148**

The United States Environmental Protection Agency (EPA) requires most drinking water suppliers in the country to provide a water quality report to their customers. This annual report concerns the quality of water provided by Memorial Villages Water Authority to the residents of Hedwig, Hunters Creek and Piney Point Villages. Questions concerning this report should be directed to our General Manager, Mr. Mike Montgomery, by calling 713-465-8318.

### **OUR DRINKING WATER MEETS OR EXCEEDS ALL FEDERAL (EPA) DRINKING WATER REQUIREMENTS.**

This report is a summary of the quality of the water we provide our 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 this report. We hope this information helps you become more knowledgeable about what's in your drinking water. **All drinking water may contain contaminants.** When drinking water meets federal standards there may not be any health based benefits to purchasing bottled water or point of use devices. 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 Environmental Protection Agency's Safe Drinking Water Hotline at 1-800-426-4791. The following pages list many of the federally regulated or monitored constituents which have been found in your drinking water. The U.S. E.P.A. requires water systems to test up to 97 contaminants. **Secondary Constituents:** Many constituents (such as calcium, sodium or iron) 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 EPA. These constituents are not causes for health concerns. Secondary constituents are not required to be reported in this document but they may greatly affect the appearance and taste of your water. For more information call the Water Authority at 713-465-8318.

### **SPECIAL NOTICE**

You may be more vulnerable than the general population to certain microbial contaminants, such as *Cryptosporidium*, in drinking water. **INFANTS**, some **ELDERLY** or **IMMUNO-COMPROMISED PERSONS** such as those undergoing **CHEMOTHERAPY** for cancer; those who have undergone **ORGAN TRANSPLANTS**; those who are undergoing treatment with certain **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 healthcare providers. Additional guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* & other microbial contaminants are available from the Safe Drinking Water Hotline by calling 1-800-426-4791.

### **WHERE DOES YOUR DRINKING WATER COME FROM?**

In 2012, the Water Authority provided over 64% of its treated drinking water from its five (5) water wells. These wells produce water from the Evangeline Aquifer. This type of water source is commonly referred to as **groundwater**. The other source of our drinking water comes from the City of Houston (COH) in the form of **surface water**. **Surface water** comes from rivers, lakes, streams, ponds, reservoirs, and springs. A Source Water Susceptibility Assessment of our drinking water is currently being updated by the Texas Commission on Environmental Quality (TCEQ). The report will describe the susceptibility & type of constituents that may come in contact with your drinking water source based on human activities & natural conditions. The information contained in the assessment allows us to focus on source water protection strategies. Further details about sources of water is available at <http://dww.tceq.state.tx.us/DWW/>. For more information on source water assessments & protection efforts see <http://gis3.tceq.state.tx.us/swav/Controller/index.jsp?wtrsrc=>.

### **SOURCES OF DRINKING WATER**

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 animal or from human activity.

#### **Contaminants that may be present in source water:**

- **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 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 byproducts of industrial processes and petroleum production, and can also come from gas stations, urban storm water runoff, and septic systems.
- **Radioactive contaminants**, which can be naturally-occurring or be the result of oil and gas production and mining activities.

# WHAT YOU NEED TO KNOW TO BETTER UNDERSTAND WHAT IS IN YOUR WATER

**Definitions:** The following tables contain scientific terms and measures, some of which may require explanation.

**Maximum Contaminant Level (MCL):** The highest permissible level of a contaminant that is allowed in drinking water. MCL's are set as close to the MCLG's 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. MCLG's 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.

**Action Level (AL):** The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow. **Action Level Goal (ALG)** The level of a contaminate in drinking water below which there is no known or expected risk to health. ALG's allow for a margin of safety.

**Av<sub>g</sub>:** Regulatory compliance with some MCL's are based on running average of monthly samples. **pCi/l** = Pico curies per liter (a measure of radioactivity); **NTU** = Nephelometric Turbidity Units; **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; **MFL** = million fibers per liter (a measure of asbestos); **ND** = Not Detected; **NA** = Not Applicable.

**TABLE I** = Information on the **groundwater** supplied by the Water Authority as part of its drinking water supply.

**TABLE II** = Information on the **blended water** supplied by Houston to the Water Authority as part of its drinking water supply.

**TABLE I - Memorial Villages Water Authority's Public Water Supply System — I.D. No. 1010146**  
**2012\* CONTAMINANTS DETECTED IN YOUR DRINKING WATER; NONE WERE ABOVE THE MCL**

<b>REGULATED CONTAMINANTS</b>							
Year/Range	Constituent	Highest Level	Range of Levels	MCLG	MCL	Unit of Measure	Source of Constituent
1/13/11	Antimony	Levels lower than the detect level	0—0	6	6	ppb	Discharge from petroleum refineries; fire retardants; ceramics; electronics; Solder; test addition.
1/13/11	Arsenic	3.1	0—3.1	0	10	ppb	Erosion of natural deposits; Runoff from orchards and from glass and electronics production wastes.
1/13/11	Barium	0.0895	0.0519—0.0895	2	2	ppm	Erosion of natural deposits; Discharge of drilling wastes and metal refineries.
1/13/11	Beryllium	Levels lower than the detect level	0—0	4	4	ppb	Discharge from metal refineries & coal-burning factories; discharge from electrical, aerospace & defense.
1/13/11	Cadmium	Levels lower than the detect level	0—0	5	5	ppb	Corrosion of galvanized pipes; Erosion of natural deposits; Discharge from metal refineries; runoff from waste batteries.
1/13/11	Chromium	Levels lower than the detect level	0—0	100	100	ppb	Discharge from steel & pulp mills; Erosion of natural deposits.
1/13/11	Fluoride	0.62	0.40—0.62	4	4	ppm	Erosion of natural deposits; Water additive which promotes strong teeth. Discharge from fertilizer & aluminum factories.
2/21/12	Nitrate	0.23	0.02—0.23	10	10	ppm	Erosion of natural deposits. Runoff from fertilizer use; leaching from septic tanks & sewage.
2/21/12	Nitrite	Levels lower than	<0.01	1	1	ppb	Runoff from fertilizer use; Leaching from septic tanks, sewage,; Erosion of natural deposits.
1/13/11	Selenium	Levels lower than the detect level	0—0	50	50	ppb	Discharge from petroleum and metal refineries; erosion of natural deposits discharge from mines.
1/13/11	Thallium	Levels lower than the detect level	0—0	0.5	2	ppb	Discharge from electronics, glass & leaching from ore-processing sites; Drug factories.
1/13/11	Mercury	Levels lower than the detect level	0—0	2	2	ppb	Erosion of natural deposits; Discharge from refineries & factories; runoff from landfills/croplands.

<b>RADIOACTIVE CONTAMINATES</b>							
		Highest Level Detected	Range of Levels	MCLG	MCL	Unit of	
2005-09	Uranium	0.6	0—0.6	0	30	ppb	Erosion of natural deposits.
2005-09	Combined Radium (226 & 228)	1	1—1	0	5	pCi/L	Erosion of natural deposits.
2005-09	Gross alpha	Levels lower than the detect level	0—0	0	15	pCi/L	Erosion of natural deposits.
2005-09	Gross beta emitters	5.4	0—5.4	0	4	mrem/yr	Decay of natural & manmade deposits

**Maximum Residual Disinfectant Level** Systems submit disinfection data on the Disinfection Level Quarterly Operating Report (DLQOR)

Year	Disinfectant	Average Level	Min Level	Max Level	MRDL	MRDLG	Units	Source of Disinfectant
2012	Free Chlorine	1.04	0.04	2.4	4.0	4.0	ppm	Disinfectant used to control microbes.

<b>Disinfection By-Products</b>							
Year	Constituent	Highest Level	Range of Level	MCLG Level	MCL	Unit of Measure	Source of Constituent
2012	Total Haloacetic Acids	19.1	5.1—19.1	No Goal	60	ppb	Byproduct of drinking water disinfection.
2012	Total Trihalomethanes	32.7	10.3—32.7	No Goal	80	ppb	Byproduct of drinking water disinfection.

**Turbidity:** 2009—Highest Sample = 0.40 Lowest Monthly % Meeting Limits=99% Turbidity Limit=0.3 NTU—Comes from soil runoff.

**Total Coliform:** MCLG=0; 1 positive monthly sample. MCL=2 or more/month: NO VIOLATION Naturally present in the environment.

**E. Coli or Fecal Coliform:** Total No. of Positive E. Coli or Fecal coliform Samples = ZERO (-0-) NO VIOLATION.

**Violation Type: Monitoring Groundwater**—Triggered additional monitoring. We failed to collect all the follow-up samples within 24 hours of learning of the total coliform-positive sample listed above. These needed to be tested for fecal indicators from all sources that were being used at the time the positive samples were collected. Subsequent testing showed no bacteriological contamination of the source water.

**UNREGULATED INITIAL DISTRIBUTION SYSTEM EVALUATION FOR DISINFECTIONBYPRODUCTS:** WAIVED OR NOT YET SAMPLED

\* The MCL for beta particles is 4/mrem/year. EPA considers 50 pCi/L to be the level of concern for beta particles.

**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. **TURBIDITY**—has no health effects. However, it can interfere with disinfection & provide a medium for microbial growth. Turbidity may indicate the presence of disease-causing organisms including bacteria, viruses & parasites that can cause nausea, diarrhea & associated headaches.

**TABLE I — CONTINUED - Memorial Villages Water Authority's Public Water Supply System — I.D. No. 1010146  
2012\* CONTAMINANTS DETECTED IN YOUR DRINKING WATER; NONE WERE ABOVE THE MCL**

<b>Secondary and Other Regulated Constituents</b> (No associated adverse health effects)							
Year	Constituent	Average Level	Minimum Level	Maximum Level	Secondary Limit	Unit of Measure	Source of Constituent
1/13/11	Aluminum	0.036	0.026	0.047	.05	ppm	Abundant—naturally occurring Element
1/13/11	Bicarbonate	145.66	113	206	N/A	ppm	Corrosion of carbonate rocks
1/13/11	Calcium	34.6	27	42.1	N/A	ppm	Abundant—naturally occurring element.
1/13/11	Copper	0.0025	0.0024	0.026	1	ppm	Corrosion of household plumbing systems; erosion of natural deposits leaching from wood preservatives.
1/13/11	Hardness as CaCO <sub>3</sub>	103.4	82.8	124	N/A	ppm	Naturally occurring Calcium & magnesium.
1/13/11	Iron	0.026	0.018	0.034	0.3	ppm	Erosion of natural deposits; iron or steel water delivery
1/13/11	Magnesium	4.2	3.73	4.58	N/A	ppm	Abundant naturally occurring element.
1/13/11	Manganese	0.0116	0.0106	0.0126	.05	ppm	Abundant naturally occurring element.
1/13/11	Nickel	0.002	0.0018	0.0029	N/A	ppm	Erosion of natural deposits.
1/13/11	pH	7.9	7.8	8.0	> 7	units	Measure of waters corrosivity.
1/13/11	Sodium	62.15	37.5	86.8	N/A	ppm	Erosion of natural deposits; byproduct of oil field activity.
1/13/11	Sulfate	50.6	58	59	300	ppm	Naturally occurring; common industrial byproduct; byproduct of oil field activity.
1/13/12	Total Alkalinity as CaCO <sub>3</sub>	119.33	92	169	N/A	ppm	Naturally occurring in mineral salts.
1/13/12	Total Dissolved Solids	269.33	243	308	1000	ppm	Total dissolved mineral constituents in water.
1/13/12	Zinc	0.008	0.0074	0.0081	5	ppm	Moderately abundant naturally occurring element used in metal
<b>LEAD and COPPER</b>							
Year	Constituent	90th Percentile	No. of Sites Exceeding AL	Action Level	Unit of Measure	Source of Constituent	
2012	Copper	0.111	0	1.3	ppm	Corrosion of household plumbing systems; Erosion of natural deposits	
2012	Lead	8.45	0	15	ppb	Corrosion of household plumbing system; Erosion of natural deposits; Leaching from wood preservatives.	
MCLG—Copper = 1.3							
MCLG—Lead = 0							

**LEAD in Drinking Water:** 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 it 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 at (1-800-426-4791) or by logging on to EPA's web site at: <http://www.epa.gov/safewater/lead>

**PUBLIC PARTICIPATION OPPORTUNITIES FOR MEMORIAL VILLAGES WATER AUTHORITY**

BOARD MEETINGS: 1ST Tuesday of each Month  
 LOCATION: 8955 Gaylord Drive, Houston, 77024  
 TIME: 7:00 p.m.  
 FOR INFORMATION CALL: 713-465-8318  
**VISIT OUR WEB SITE AT: [WWW.MVWA.ORG](http://WWW.MVWA.ORG)**

**ARSENIC:** While your drinking water meets EPA's standard for arsenic, it does contain low levels of arsenic. EPA's standard balances the current understanding of arsenic's possible health effects against the costs of removing arsenic from drinking water. EPA 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:** Nitrate in drinking water at levels above 10 ppm is a health risk for infants of less than 6 months of age. High nitrate levels in drinking water can cause blue baby syndrome. Nitrate levels may rise quickly for short periods of time because of rainfall or agricultural activity. If you are caring for an infant, ask for advice from your health care provider.

The Water Authority conducts more tests on its drinking water than is required by either the TCEQ or the EPA and obtains regular water quality reports from the City of Houston on the water they provide to us. In **2012**, the City of Houston's drinking water met or exceeded all State and Federal requirements. Over the past 10 years more than 10 million dollars has been spent on our water supply system. These expenditures have included the installation of surface water transmission lines, replacement and upgrading of old water lines, the addition of new fire hydrants and, upgrading components for improved reliability. The Board and employees of the Water Authority take very seriously the trust you have placed in us to insure that your water is safe.

**THE WATER AUTHORITY IS COMMITTED TO PROTECTING YOUR DRINKING WATER**

**TABLE II - City of Houston: Surface Water supplied to Memorial Villages Water Authority**

Houston Entry Points 101 - East Water Plants I & II

Houston's Main System I.D. No. 1010013

**2012\* CONTAMINANTS DETECTED IN YOUR DRINKING WATER; NONE WERE ABOVE THE MCL**

**Regulated Contaminates**

Year	Constituent	Detected Level	Unit of Measure	MCL	MCLG	Source of Constituent
3/01/12	Atrazine	0.00033	mg/L	3	3	Runoff from herbicide used on row crops.
3/08/12	Barium	0.0672	ppm			Erosion of natural deposits; Discharge of drilling wastes and metal refineries.
1/21/12	Fluoride	.22	ppm	4	4	Erosion of natural deposits; Water additive which promotes strong teeth; Discharge from fertilizer and aluminum factories.
2/21/13	Hexachlorocyclopentadiene	0.00013	mg/L	0.004	0.004	Found in pesticides
1/21/12	Nitrate	0.39	ppm	10	10	Erosion of natural deposits; Runoff from fertilizer use; Leaching from septic tanks and sewage.
3/08/12	Arsenic	<2.0	ppb	10*	0	Erosion of natural deposits; Runoff from orchards from orchards and from glass and from electronic production waste.
(*New arsenic values were effective January 23, 2006. In the event of a violation, you will be notified)						
2/24/11	Combined Radium (226 & 228)	<1.0	pCi/l			Erosion of natural deposits.
2/24/11	Alpha Emitters	<2.0	pCi/l			Erosion of natural deposits.
2/24/11	Beta Emitters	4.6	pCi/l			Erosion of natural deposits.

**ORGANICS**

Year	Constituent	Detected Level	Unit of Measure	MCL	MCLG	Source of Constituent
3/01/12	Simazine	0.1	ug/L	4	4	Runoff from herbicide used on row crops.

**SECONDARY and OTHER REGULATED CONSTITUENTS**

Year/Range	Constituent	Detected Level	Unit of Measure	Source of Constituent
3/08/12	Aluminum	0.391	ppm	naturally occurring element
2/21/12	Bicarbonate	66	ppm	Corrosion of carbonate rocks such as limestone.
3/08/12	Calcium	24	ppm	Naturally occurring element
2/21/12	Chloride	35	ppm	Erosion of natural deposits; Discharge of drilling wastes; Discharge from metal refineries.
2/21/12	Total Alkalinity as CaCO <sub>3</sub>	54	ppm	Naturally occurring soluble mineral salts.
2/21/12	Sulfate	51	ppm	Naturally occurring; common industrial byproduct of oil field activity.
2/21/12	Nitrate	0.39	ppm	Runoff from fertilizer use; Leaching from septic tanks, sewage,; Erosion of natural deposits.
3/08/12	Sodium	19.2	ppm	
2/22/12	Total Dissolved Solids	190	ppm	Total dissolved mineral constituents in water.
2/21/12	pH	7.5	units	Measure of waters corrosivity.

**UN-REGULATED DISINFECTION BY-PRODUCT**

Year	Constituent	Result	Unit of Measure	Source of Constituent
8/16/12	Chloroform	22	ppb	Byproduct of drinking water disinfection.
8/16/12	Bromodichloromethane	11	ppb	Byproduct of drinking water disinfection.
8/16/12	Dibromochloromethane	3.0	ppb	Byproduct of drinking water disinfection.
8/16/12	Bromoform	<.5	ppb	Byproduct of drinking water disinfection.
8/16/12	Dibromomethane	<1.0	ppb	Byproduct of drinking water disinfection.

**LEAD and COPPER**

Year	Constituent	The 90th Percentile	No. of Sites Exceeding AL	Action Level	Unit of Measure	Source of Constituent
2003	Lead	4.4000	0	15	ppb	Corrosion of household plumbing systems; Erosion of natural deposits
2003	Copper	0.1050	0	1.3	ppm	Corrosion of household plumbing system; Erosion of natural deposits; Leaching from wood preservatives.

<b>Turbidity:</b>	Avg.	Min.	Max.	Unit of Measure	Lowest Monthly % of samples Meeting Limits	Turbidity Limits	Source of Constituent
Year							
2012	0.10	0.07	0.28	NTU	100%	0.3	Soil Runoff

**UCMR2** -Unregulated Contaminant Monitoring Rule (List 2)

2011	n-Nitrosodimethylamine (NDMA)	Avg. = 0.0143 ppb	Max. = 0.0250 ppb (8 samples)
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Additional information concerning the City of Houston's Water Quality may be obtained by calling the Water Authority at 713-465-8318 or the Water Production Branch of the Department of Public Works, City of Houston at 713-842-4001.

\*Or latest information available.