Annual Drinking Water Quality Report 2017

Annual Water Quality Report for the period of January 1, 2017 to December 31, 2017

Lake Worth, Texas

This report is a summary of the quality of water provided to Lake Worth customers. Analyses were made by using data from the most recent U.S. Environmental Protection Agency (EPA) testing requirements and presented in the attached documentation. This information helps you become knowledgeable about what's in you drinking water. Lake Worth's constant goal is to provide you with a safe and dependable supply of water.

For more information regarding this report or concerning your water service, please contact.

City of Lake Worth Water Department

817-237-1211 ext. 200

En español Este informe incluye información importante sobre el agua potable. Si tiene preguntas o' comentarios sobre este informé en español, favor de llamar al tel. (817) 237-1211 EXT 110. Par hablar con una persona bilingüe en español.

TCEQ Assesses Raw Water Supplies for Susceptibility

The City of Lake Worth produces drinking water from two wells. The water comes from the Paluxy and Trinity Aquifers. Lake Worth also purchases drinking 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 Tarrant Regional Water District. The Texas Commission on Environmental Quality completed an assessment of Fort Worth's source waters. TCEQ classified the risk to our water source waters as high for most contaminants. High susceptibility means there are activities near the source water a or watershed make it very likely that chemical constituents may come into contact with the source water. It does not mean that there are any health risk present. Tarrant Regional Water District, from which Fort Worth purchases its water, received the assessment reports. For more information on source water assessments and protection efforts at our system, contact Stacy Walters at 817.392.8203. Further details about the source-water assessments are available in the Texas Commission on Environmental Quality's Drinking Water Watch database at: *hhtp://dww2.tceq.texas.gov/DWW/JSP/SWAP.jsp?tinwsys_is_number=5802&tinwsys_st_code=TX&wsnumber=TX2200012%20%20%20&DWWState=TX*

SOURCE OF DRINKING WATER

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

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 EPAs Safe Drinking Water Hotline at (800) 426-4791.

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 discharge, 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, 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, EPA prescribes regulations which limit the amount of certain contaminants in water provided by public water systems. FDA regulation establish limits for contaminants in bottle water which 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 system's business office.

You may be more vulnerable than the general population to certain micobial contaminants, such as Cryptosporodium, in drinking water. Infants, some elderly, or immunocompromised person such as those undergoing chemotherapy for cancer; persons 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 (800) 426-4791.

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water primarily from materials and components associated with service lines and home plumbing. We are responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When you 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.

Information about Source Water Assessments

A Source Water Susceptibility Assessment for your drinking water source(s) is currently being updated by the Texas Commission on Environmental Quality. This information describes the susceptibility and types of constituents that may come into contact with your drinking water source based on human activities and natural conditions. The information contained in the assessment allows us to focus source water protection strategies.

For more information about your sources of water, please refer to the Source Water Assessment Viewer available at: http://gis3.tceq.state.tx.us/swav/Controller/index.jsp?wtrsrc=

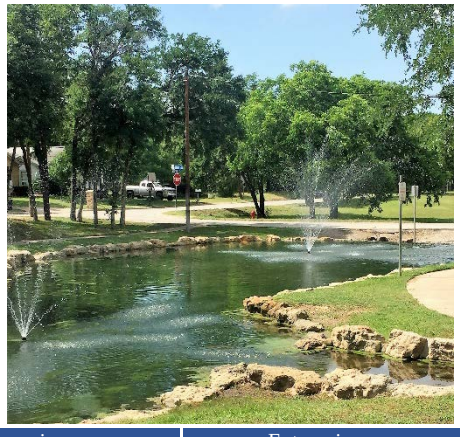
Further details about sources and source-water assessments are available in Drinking Water Watch at: http://dww.tceq.texas.gov/DWW

Source Water Name		Type of Water	Report Status	Location
3 Azle Ave / HWY 820 (PS 2)	Azle Ave / HWY 820	GW	A	Longitude: -97.414927 Latitude: 32.813497
5 Stadium Wall / Boat Club (PS 4)	PS 4	GW	A	Longitude: -97.414448 Latitude: 32.818708
SW from Fort Worth	CC From TX2200012 City of	SW	A	Longitude: -97.421449 Latitude: 31.822186

CITY OF FORT WORTH DATA:

Microorganism testing shows low detections in raw water.

Tarrant Regional Water District monitors the raw water at all intake sites for Cryptosporidium, Giardia Lamblia and viruses. The source is human and animal fecal waste in the watershed. The 2017 sampling showed low level detections of Giardia Lamblia which is common is surface water. Cryptosporidium and viruses were not detected in any of the samples. (The table below indicates when detections were found in each raw water source.) Viruses are treated through disinfection processes. Cryptosporidium and Giardia Lamblia are removed through disinfection and/or filtration.



Intake Location	Giardia Lamblia	Cryptosporidium	Adenovirus	Enterovirsus
Richland-Chambers Reservoir	Not Detected	Not Detected	Not Detected	Not Detected
Cedar Creek Lake	March	Not Detected	Not Detected	Not Detected
Lake Benbrook	May	Not Detected	Not Detected	Not Detected
Eagle Mountain Lake	January	Not Detected	Not Detected	Not Detected
Lake Worth	January	Not Detected	Not Detected	Not Detected
Clearfork of Trinity River	January, February, April, May, June	Not Detected	Not Detected	Not Detected

City of Lake Worth Data for calendar year 2017

Regulated Contaminants – Not all sample results may have been used for calculating the Highest Level Detected because some results may be part of an evaluation to determine where compliance sampling should occur in the future.

Disinfection By-Product	Collection Date	Highest Level of Average Detected	Range of Individual Samples	MCLG	MCL	Unit	Violation	Likely Source of Contamination
Haloacetic Acids (HAAS)	2017	9	2.2 – 6	NA	60	ppb	N	By-product of drinking water disinfections
The value in the Highest Level or Average Detected column is the highest average of all HAAS sample results collected at a location over a year.								
Total Trihalomethanes (TTHM)	2017	11	1.45 – 14.1	NA	80	ppb	N	By-product of drinking water disinfections
The value in the Highest Level or Average Detected column is the highest average of all TTHM sample results collected at a location over a year.								

Inorganic Contaminants - Nitrate Advisory - 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. Nitrate levels may rise quickly for short periods of time because of rainfall or agricultural activity. If you are caring for an infant you should ask advice from your health care provider.

Inorganic Contaminants	Collection Date	Highest Level of Average Detected	Range of Individual Samples	MCLG	MCL	Unit	Violation	Likely Source of Contamination
Barium	01/20/16	0.014	0.011 - 0.014	2	2	ppm	N	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits.
Cyanide	2017	35.8	0 – 35.8	200	200	ppb	N	Discharge from plastic and fertilizer factories; Discharge from steel / metal factories.
Fluoride	2017	0.352	0.352 – 0.352	4	4.0	ppm	N	Erosion of natural deposits; Water additive which promotes strong teeth; Discharge from fertilizer and aluminum factories.
Nitrate (Measured as Nitrogen)	2017	0.42	0 – 0.42	10	10	ppm	N	Runoff from fertilizer use; leaching from septic tanks; sewage; Erosion of natural deposits.
Nitrite (Measured as Nitrogen)	01/26/15	0.043	0 – 0.043	1	1	ppm	N	Runoff fertilizer use; Leaching from septic tanks,
Radioactive Contaminants	**Collection Date**	**Highest Level of Average Detected**	**Range of Individual Samples**	**MCLG**	**MCL**	**Unit**	**Violation**	**Likely Source of Contamination**
Combined Radium 226/228	01/20/16	1.5	1.5 – 1.5	0	5	pCi/L	N	Erosion of natural deposits.

Disinfectant Residual

Disinfectant Residual	Year	Average Level	Range of Levels Detected	MRDL	MRDLG	Unit	Violation	Source in Drinking Water
Chlorine Residual	2017	2.39	0.5 – 3.6	4	4	ppm	N	Disinfectant used to control microbes

Turbidity

Contaminant	Measure	MCL	MCLG	2017	Violation	Source in Drinking Water
Turbidity	2017	TT=1, TT= Lowest monthly % of samples ≤ 0.3 NTU	NA	0.6 99.8%	N	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>)

Lead and Copper

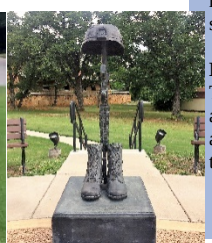
Lead and Copper	Date Sample	MCLG	Action Level (AL)	90th Percentile	# Sites Over AL	Unit	Violation	Likely Source of Contamination
Copper	08/10/16	1.3	1.3	0.25	0	ppm	N	Erosion of natural deposits; Leaching from wood preservations; Corrosion of household plumbing systems.
Lead	08/10/16	0	15	3	0	ppb	N	Corrosion of household plumbing systems; Erosion of natural deposits.

Coliform Bacteria

Maximum Contaminant Level Goal	Total Coliform Maximum Contaminant Level	Highest No. of Positive	Decal Coliform or E. Coli. Maximum Contaminant Level	Total No. of Positive E. Coli or Fecal Coliform Samples	Violations	Likely Source of Contamination
0	1 positive monthly sample	1	0	0	N	Naturally present in the environment.

CITY OF LAKE WORTH: 2017 Water Loss Audit

The City of Lake Worth's Conservation Plan addresses several measures in reducing water loss and improving the efficiency in the use of water. In the water loss audit submitted to the Texas Water Development Board for the time period of January through December 2017, the system lost an estimated 8.23% of water from the 279,927,870 gallons of water produced/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 loss.



DEFINITIONS & ABBREVIATIONS

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

MRDGL (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.

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

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

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

Level 1 Assessment – Level 1 assessment is a study of a water system to identify potential problems and determine (if possible) why total coliform bacteria have been found in water system.

Level 2 Assessment – Level 2 assessment is a very detail study of the water system to identify potential problems and determines (if possible) why total coliform bacteria have been found in out water system on multiple occasions.

Mrem – millirems per year (a measure or radiation absorbed by the body.)

NTU – Nephelometric Turbidity Units (a measure of turbidity.)

MFL – million fibers per liter (a measure of asbestos)

pCi/l – picocuries per liter (measurement of radioactivity)

Ppm - milligrams per liter or parts per million or one ounce in 7,350 gallons of water.

Ppb – micrograms per liter of parts per billion or one ounce in 7,350,000 gallons of water.

NA – not applicable

Avg – regulatory compliance with some MCLs are based on running annual average of monthly samples.

Ppt – parts per trillion, or nanograms per liter (ng/L)

Ppg – parts per quadrillion, or picograms per liter (pg/L)

ALG – (Action Level Goal) The level of a contaminant in drinking water below which there is no known or expected risk to health. ALGs allow for margin of safety.

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

SW From Fort Worth CC From TX2200012 City of Fort Worth

The following information is provided by the City of Fort Worth since the City of Lake Worth purchases treated water from Fort Worth.

Contaminant	Measure	MCL	MCLG	2017	Range	Violation	Common Source of Substance
Beta Particles & photon emitters	pCi/L	50	0	5.6	4.4 – 5.6	N	Decay of natural and man-made deposits of certain minerals that are radioactive and may emit forms of radiation known as photons and beta radiation.
Combined Radium (-226 & -228)	pCi/L	5	0	2.5	NA	N	Erosion of natural deposits
Uranium	ppb	30	0	1.1	0 – 1.1	N	Erosion of natural deposits
Arsenic	ppb	10	0	2	0 – 2	N	Erosion of natural deposits; runoff from orchards, runoffs from glass and electronics production waste.
Atrazine	ppb	3	3	0.1	0.0 – 0.1	N	Runoff from herbicide used on row crops
Barium	ppm	2	2	0.08	0.06 – 0.08	N	Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits.
Chromium (Total)	ppb	100	100	1.6	0 – 1.6	N	Discharge from steel and pulp mills, erosion of natural deposits.
Cyanide	ppb	200	200	57.0	0 – 57.0	N	Discharge from plastic and fertilizer factories; discharge from steel and metal factories.
Di (2-Ethylhexyl) phthalate	ppb	6	0	1.2	0 – 1.2	N	Discharge for rubber and chemical factories.
Fluoride	ppm	4	4	0.66	0.32 – 0.66	N	Water additive which promotes strong teeth; erosion of natural deposits; discharge from fertilizer and aluminum factories.
Nitrate (measured as Nitrogen)	ppm	10	10	0.76	0.13 – 0.76	N	Runoff fertilizer use, teaching from septic tanks, sewage; erosion of natural deposits.
Nitrite (measured as Nitrogen)	ppm	1	1	0.03	0.01 – 0.03	N	Runoff fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits.
Simozine	ppb	4	4	0.06	0 – 0.06	N	Herbicide runoff
Bromate	ppb	10	0	2	0 – 13	N	By-product of drinking water disinfection.
Total Trihalomethanes (TTHM)	ppb	80	NA	11	1.45 – 14.1	N	By-product of drinking water disinfection.
Haloacetic Acids	ppb	60	NA	9	2.2 - 6	N	By-product of drinking water disinfection.

Contaminant	Measure	MRDL	MRDLG	2017 Level	Range	Violation	Common Source of Substance
Chloramines	ppm	4	4	2.39	.5 – 3.6	N	Water additive used to control microbes

Used to determine disinfection by-product precursors. Fort Worth was in compliance with all monitoring and treatment technique for disinfection by-product precursors.

Contaminant	MCL	MCLG	Hign	Low	Average	Violation	Common Source of Substance
Total Organic Carbon	TT = % removal	NA	1	1	1	N	Naturally occurring

Unregulated Contaminants

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

Contaminant	Measure	MRDL	MRDLG	2017 Level	Range of Detects	Common Source of Substance
Chloral Hydrate	ppb	Not Regulated	0	.70	0.18 – 0.70	By-Product of drinking water disinfection
Bromoform	ppb	Not Regulated	0	5.83	1.19 – 5.83	By-products of drinking water disinfection; not regulated individually; included in Total Trihalomethanes
Bromodichloromethane	ppb	Not Regulated	0	7.81	3.37 – 7.81	
Chloroform	ppb	Not Regulated	0.07	7.96	2.58 – 7.96	
Dibromochloromethane	ppb	Not Regulated	0.06	8.51	4.33 – 8.51	
Monochloroacetic Acid	ppb	Not Regulated	0.07	0	0 – 0	By-products of drinking water disinfection; not regulated individually; included in Haloacetic Acids.
Dichloroacetic Acid	ppb	Not Regulated	0	8.60	4.70 – 8.60	
Trichloroacetic Acid	ppb	Not Regulated	0.02	1.60	0 – 1.60	
Monobromoacetic Acid	ppb	Not Regulated	NA	3.10	1.60 – 3.10	
Dibromoacetic Acid	ppb	Not Regulated	NA	15.3	11.9 – 15.3	

Secondary Constituents

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

Item	Measure	2017 Range
Bicarbonate	ppm	108 – 144
Calcium	ppm	37.4 – 50.6
Chloride	ppm	11.6 – 36.1
Conductivity	uhms/cm	299 – 456
pH	units	7.8 – 8.6
Magnesium	ppm	2.69 – 7.78
Sodium	ppm	9.57 – 25.9
Sulfate	ppm	24.8 – 34.4
Total Alkalinity as CaCO3	ppm	108 – 145
Total Dissolved Solids	ppm	116 – 255
Total Hardness as CaCO3	ppm	113 – 157
Total Hardness in Grains	Grains/gallon	7 – 9

EMERGENCY INTERCONNECTION – From April 24 to April 25, 2017, Fort Worth used the emergency interconnection with the Trinity River Authority of Texas-Tarrant Water Supply Project to supply water to the Centreport portion of the Fort Worth distribution system while repairs were made. The volume of water was subsequently repaid to TRA-TCWSP the next day via the emergency interconnection. To obtain the TRA-TCWSP water quality data, City of Lake Worth (817) 237-1211 ext. 205.