July 1, 2018 Report

2017 Drinking Water Quality

Message From MAWSS

Mobile Area Water and Sewer System (MAWSS) is pleased to present our 2017 Water Quality Report. This report, required annually by the federal Safe Drinking Water Act, states that our water meets or exceeds all state and federal standards for safety. It provides information on our water quality and test results from hundreds of samples collected from throughout our water service area. These daily tests ensure that every time you turn on your tap the water you drink is safe. A safe, reliable and affordable water supply contributes to the health and economic well-being of our community, as well as our quality of life.

MAWSS Water Treatment Plants were again recognized for operational excellence in 2017. The E.M. Stickney Water Treatment Plant received an Award of Excellence from the Alabama Water Pollution and Control Association. This award is based on performance, water quality, record keeping, appearance and safety. MAWSS H.E. Myers Water Treatment Plant was named an Optimized Plant by Alabama Department of Environmental Management (ADEM). This award recognizes plants and operators that consistently maintain treatment standards over and above those required by U.S. Environmental Protection Agency (EPA) and ADEM, providing an extra level of protection for public health.

Quality Control...

Keeping our water safe!

Where does our water come from?

The source of MAWSS drinking water is Converse Reservoir, also known as Big Creek Lake, which is fed by springs, streams, and rainfall in the Converse Reservoir Watershed.

Converse Reservoir is 3,600 acres in surface area. The reservoir's watershed covers 103 square miles and lies totally within Mobile County. The reservoir provides all the drinking water for MAWSS customers.

MAWSS has completed the source water assessment of the reservoir as required by EPA and ADEM.

How do contaminants get into the water?

As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals and can pick up substances resulting from the presence of animals or human activity. Contaminants that may be present in source water include:

- Microbial contaminants, such as viruses and bacteria, which may come from septic systems, agricultural livestock operations, and wildlife.
- Inorganic contaminants, such as salts and metals, which can be naturally occurring or result from stormwater runoff or farming.
- Pesticides and herbicides, which may come from a variety of sources such as agriculture, stormwater runoff, and residential uses.
- Organic chemical contaminants, including synthetic and volatile organic chemicals, which can come from gas stations, stormwater runoff, and septic systems.

EPA Advisory Statement

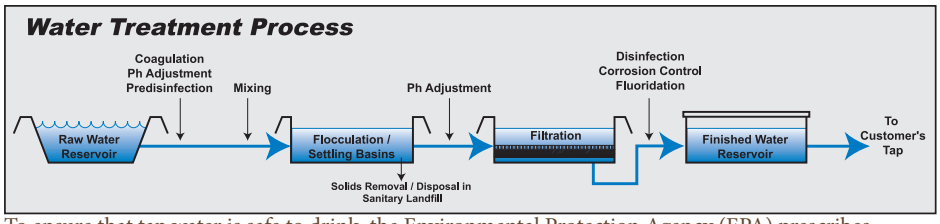
The EPA advises: "All drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the Environmental Protection Agency's Safe Drinking Water Hotline (800-426-4791)."

Lead Specific Statement

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. MAWSS 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 it 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 (800-426-4791), http://www.epa.gov/safewater/lead or www.mawss.com.

For people with compromised immune systems

The EPA advises: "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. EPA/CDC guidelines on appropriate means to lessen the risk of infections by *Cryptosporidium* and other microbial contaminants are available from the Safe Drinking Water Hotline (800-426-4791)."



To ensure that tap water is safe to drink, the Environmental Protection Agency (EPA) prescribes regulations that limit the amount of certain contaminants in water provided by public water systems. MAWSS employs the above treatment process to provide safe drinking water to all customers.

2017 Detected Contaminants

REGULATED SUBSTANCES

SUBSTANCE	MCLG	MCL	HIGHEST DETECT	RANGE	MAJOR SOURCES
Fluoride, ppm	4	4	0.60	<0.2 - 0.6	Water additive promoting strong teeth; Erosion of natural deposits; Discharge from fertilizer and aluminum factories
Nitrate, ppm	10	10	0.2	<0.1 - 0.2	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
Turbidity, NTU	N/A	TT (under filter) -at least 95% of samples <0.3	0.23 (TT not exceeded)	0.007 - 0.23	Soil runoff
Total Organic Carbon (TOC)	N/A	TT	Lowest Performance Ratio 1.11	1.11 - 1.99	Naturally present in the environment
Chlorine, ppm	MRDLG = 4	MRDL = 4	1.81	0.53 - 1.81	Water additive used to control microbes
Chlorite, ppm	0.8	1	0.76	0 - 0.76	Disinfection by-product
Chlorine Dioxide, ppb	MRDLG = 800	MRDL = 800	440	0 - 440	Water additive used to control microbes
Barium, ppm	2	2	0.03	<0.1 - 0.03	Discharge of drilling wastes; Discharge from metal refineries. Erosion of natural deposits
Lead, ppb	0	AL = 15 at 90th percentile	ND at 90th percentile (AL not exceeded)	ND	Corrosion of household plumbing systems; Erosion of natural deposits
Copper, ppm	1.3	AL = 1.3 at 90th percentile	0.03 at 90th percentile (AL not exceeded)	ND - 0.07	Corrosion of household plumbing systems; Erosion of natural deposits; Leaching from wood preservatives
Total Trihalomethanes, ppb	N/A	80	Highest average = 54.13	12.7 - 78.1	Disinfection by-product
Haloacetic Acids (HAA5), ppb	N/A	60	Highest average = 38.95	8.3 - 43.6	Disinfection by-product
Gross Alpha, pCi/L	0	15	1.3	ND - 1.3	Erosion of natural deposits
Gross Beta, pCi/L	0	50	1.4	ND - 1.4	Erosion of natural deposits
Combined Radium, pCi/L	0	5	0.99	ND - 0.99	Erosion of natural deposits

SUBSTANCES REGULATED UNDER SECONDARY DRINKING WATER STANDARDS

SUBSTANCE	MCLG	MCL	HIGHEST DETECT	RANGE	MAJOR SOURCES
Aluminum, ppm	N/A	0.2	0.24	0.14 - 0.24	Secondary contaminant. May cause colored water.
Chloride, ppm	N/A	250	8	8	Secondary contaminant
Total Dissolved Solids, ppm	N/A	500	71	65 - 71	Secondary contaminant
pH	N/A	N/A	8.50	6.80 - 8.50	Special Corrosivity Monitoring (MAWSS has implemented a corrosion control program.)
Alkalinity as CaCO3, ppm	N/A	N/A	10	8 - 10	
Sodium, ppm	N/A	N/A	3.75	3.71 - 3.75	
Sulfate as SO4, ppm	N/A	250	24	22 - 24	
Calcium, ppm	N/A	N/A	15.2	12.8 - 15.2	
Magnesium, ppm	N/A	N/A	1.1	1.0 - 1.1	
Hardness as CaCO3, ppm	N/A	N/A	42.6	36.2 - 42.6	
Temperature, C	N/A	N/A	25	19 - 25	
Corrosivity (saturation index)	N/A	N/A	-1.94	-1.60 to -1.94	
Specific Conductance, µmho	N/A	N/A	126	108 - 126	
Orthophosphate as P, ppm	N/A	N/A	0.21	0.17 - 0.21	

Definitions and Abbreviations

Maximum contaminant level goal or 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 contaminant level or MCL—The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

Maximum residual disinfectant level goal or 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.

Maximum residual disinfectant level or MRDL—The highest level of a disinfectant allowed in drinking water.

Treatment Technique or TT—A required process intended to reduce the level of a contaminant in drinking water.

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

Range—The lowest to the highest values for all samples tested for each contaminant. If only one sample is tested, no range is listed for that contaminant in the table.

ppm—Parts per million, or milligrams per liter (mg/l)

ppb—Parts per billion, or micrograms per liter (µg/L)

ppt—Parts per trillion, or nanogram per liter (ng/L)

pCi/l—Picocuries per liter (a measure of radioctivity)

NTU—Nephelometric Turbidity Units

ND—None detected, or below the detection limit

N/A—Not applicable

MAWSS
MOBILE AREA WATER & SEWER SYSTEM

Standard List of Primary Drinking Water Contaminants

CONTAMINANT	MCL	AMOUNT DETECTED
BACTERIOLOGICAL		
Total Coliform Bacteria	<5%	None
Turbidity	TT	(See Note 1)
Fecal Coliform and *E.coli*	0	0
Fecal Indicators (enterococci or coliphage	TT	(See Note 2)
RADIOLOGICAL		
Beta /photon emitters (pCi/L)	50	1.4 (See Note 3)
Alpha emitters (pCi/l)	15	1.3
Combined Radium (pCi/l)	5	0.99
Uranium	30 ppb	(See Note 4)
INORGANIC CHEMICALS		
Antimony	6 ppb	<6 ppb
Arsenic	10 ppb	<10 ppb
Asbestos (MFL)	7	(See Note 5)
Barium	2 ppm	<0.1 ppm
Beryllium	4 ppb	<4 ppb
Bromate	10 ppb	(See Note 6)
Cadmium	5 ppb	<5 ppb
Chloramines	4 ppm	(See Note 6)
Chlorine	4 ppm	1.81 ppm
Chlorine Dioxide	800 ppb	440 ppb
Chlorite	1 ppm	0.76 ppm
Chromium	100 ppb	<50 ppb
Copper	AL=1.3 ppm	(See Note 7)
Cyanide	200 ppb	<20 ppb
Fluoride	4 ppm	0.6 ppm
Lead	AL=15 ppb	(See Note 8)
Mercury	2 ppb	<0.5 ppb
Nitrate	10 ppm	0.2 ppm
Nitrite	1 ppm	<0.02 ppm
Total Nitrate and Nitrite	10 ppm	0.2 ppm
Selenium	50 ppb	<20 ppb
Thallium	2 ppb	<2 ppb
ORGANIC CHEMICALS		
Acrylamide	TT	(See Note 9)
Alachlor	2 ppb	<0.034 ppb
Atrazine	3 ppb	<0.062 ppb
Benzene	5 ppb	<0.5 ppb
Benzo(a)pyrene (PAHs)	200 ppt	<13 ppt
Carbofuran	40 ppb	<0.32 ppb
Carbon Tetrachloride	5 ppb	<0.5 ppb
Chlordane	2 ppb	<0.046 ppb
Chlorobenzene	100 ppb	<0.5 ppb
2,4-D	70 ppb	<0.081 ppb
Dalapon	200 ppb	<0.89 ppb

CONTAMINANT	MCL	AMOUNT DETECTED
Dibromochloropropane	200 ppt	<200 ppt
o-Dichlorobenzene	600 ppb	<0.5 ppb
p-Dichlorobenzene	75 ppb	<0.5 ppb
1,2-Dichloroethane	5 ppb	<0.5 ppb
1,1-Dichloroethylene	7 ppb	<0.5 ppb
cis-1,2 Dichloroethylene	70 ppb	<0.5 ppb
trans-1,2-Dichloroethylene	100 ppb	<0.5 ppb
Dichloromethane	5 ppb	<2 ppb
1,2-Dichloropropane	5 ppb	<0.5 ppb
Di (2-ethylhexyl) adipate	400 ppb	<0.38 ppb
Di (2-ethylhexyl) phthlates	6 ppb	<0.52 ppb
Dinoseb	7 ppb	<0.16 ppb
Dioxin (2,3,7,8-TCDD)	30 ppq	(See Note 5)
Diquat	20 ppb	<0.30 ppb
Endothall	100 ppb	<4.3 ppb
Endrin	2 ppb	<0.0069 ppb
Epichlorohydrin	TT	(See Note 10)
Ethylbenzene	700 ppb	<0.5 ppb
Ethylene dibromide (EDB)	50 ppt	<20 ppt
Glyphosate	700 ppb	<4.2 ppb
HAA5	60 ppb	(See Note 11)
Heptachlor	400 ppt	<12 ppt
Heptachlor epoxide	200 ppt	<2.9 ppt
Hexachlorobenzene	1 ppb	<0.019 ppb
Hexachlorocyclopentadiene	50 ppb	<0.031 ppb
Lindane	200 ppt	<2.9 ppt
Methoxychlor	40 ppb	<0.05 ppb
Oxamyl (Vydate)	200 ppb	<0.55 ppb
Pentachlorophenol	1 ppb	<0.03 ppb
Picloram	500 ppb	<0.094 ppb
PCBs	500 ppt	<78 ppt
Simazine	4 ppb	<0.068 ppb
Styrene	100 ppb	<0.5 ppb
Tetrachloroethylene	5 ppb	<0.5 ppb
Toluene	1 ppm	<0.5 ppb
TOC	TT	(See Note 1)
TTHM	80 ppb	(See Note 11)
Toxaphene	3 ppb	<0.60 ppb
2,4,5-TP(Silvex)	50 ppb	<0.16 ppb
1,2,4-Trichlorobenzene	70 ppb	<1.0 ppb
1,1,1-Trichloroethane	200 ppb	<0.5 ppb
1,1,2-Trichloroethane	5 ppb	<0.5 ppb
Trichloroethylene	5 ppb	<0.5 ppb
Vinyl Chloride	2 ppb	<0.5 ppb
Xylene (Total)	10 ppm	<1.5 ppb

NOTES

Note 1 See Table of Detected Contaminants for description of Treatment Technique (TT).

Note 2 Fecal Indicators specifically applies to Ground Water Systems. MAWSS has a Surface Water System and is not applicable.

Note 3 ADEM allows compliance with this requirement to be assumed without further analysis if the average annual concentration of gross beta particle activity is less than 50 pCi/L and if the average annual concentrations of tritium and strontium-90 are less than the MCL. Gross beta particle activity was tested for and detected at 1.4 pCi/L. Sources of the man-made tritium and strontium-90 are not known to exist in the watershed.

Note 4 A gross alpha particle activity measurement may be substituted for the required Uranium analyses, provided that the measured gross alpha particle activity does not exceed 15 pCi/L. Gross alpha particle activity was tested for and detected at 1.3 pCi/L.

Note 5 Based on a study conducted by ADEM with the approval of the EPA, a statewide waiver for the monitoring of asbestos and dioxin was issued. Thus, monitoring for these contaminants was not required.

Note 6 Chloramines and Bromate are by-products formed from water treatment additives. These additives were not used during the treatment of the drinking water.

Note 7 The Action Level (AL) for Copper is 1.3 ppm at the 90th percentile. Samples were taken at 50 locations throughout the water distribution system. The concentration of Copper at the 90th percentile was 0.03 ppm, which was under the Action Level.

Note 8 The Action Level (AL) for Lead is 15 ppb at the 90th percentile. Samples were taken at 50 locations throughout the water distribution system. The concentration of Lead at the 90th percentile was not detectable, which was under the Action Level.

Note 9 Acrylamide, an impurity in polymer-based water treatment additives, was not directly added to the drinking water in the treatment process. A polymer-based flocculant, which is certified in accordance with NSF/ANSI Standard 60 for use in potable water, is used to thicken residual solids from the sedimentation and filtration stages of the water treatment process. The solids from both the Stickney and Myers treatment plants are thickened at the Myers treatment plant for final disposal at a landfill. The water that is separated from the solids is directed to the Myers water treatment plant for treatment as drinking water.

Note 10 Epichlorohydrin, an impurity of some water treatment chemicals, was not added to the drinking water.

Note 11 See Table of Detected Contaminants for Total Trihalomethanes (TTHMs) and Haloacetic Acids (HAA5) analytical results.

Mobile, we have a problem. The water and wastewater infrastructure that enables us to provide safe drinking water and reliable sanitary sewer service is aging. More than 40 percent of our underground pipes are over 50 years old. Many have reached or exceeded their useful lives. We've patched, we've repaired, and it's now time to renew or replace to ensure reliable service for the future.

MAWSS' new educational website, **www.keepwaterworking.com**, explains the impact of aging infrastructure on our community, what MAWSS is doing to fix it and at what cost. The site offers insights as well as practical ways our customers can help us keep water and wastewater costs down.

Water line breaks, sanitary sewer overflows, service outages and business disruptions are some of the ways aging pipes interrupt and reduce the quality of our lives. It's easy to say "fix it" until you realize that MAWSS has more than 3,200 miles of sewer pipe and 2,200 miles of water pipe under ground. Placed end to end, MAWSS' sewer pipes would extend from Mobile to Los Angeles and halfway back. Some of our water infrastructure was built as long ago as the late 1800s. MAWSS recently replaced the Bienville Reservoir that had been in service since 1887.

Safe drinking water and reliable sewer service are cornerstones of public health. Furthermore, without them, Mobile would be less attractive to business and industry, costing us jobs and hurting our economy.

With the completion of the master plan expected in 2018, MAWSS will develop a path forward to keep our services safe, reliable and affordable. Learn more by visiting **www.keepwaterworking.com.**

Testing of Surface Water

Contaminants for the Long Term 2 Enhanced Surface Water Treatment Rule (LT2)*

Contaminant	Minimum Reporting Level	Amount Detected	Units
Cryptosporidium	0	0	Organisms/L
E. coli	0	38	MPN**/100 mL
Giardia***	0	0	Organisms/L

* As an amendment to the Safe Drinking Water Act, EPA now requires public water systems that use surface water to monitor for *Cryptosporidium* and other microbial pathogens in drinking water for 24 consecutive months to determine if additional treatment is necessary. The purpose of the Long Term2 Enhanced Surface Water Treatment Rule is to protect public health from illness and to address disinfection by-products that may result from treatment. Results shown above are from Big Creek Lake. Although *Cryptosporidium, Giardia,* and *E. coli* may be occasionally detected in the raw water, it is not an indicator of treated drinking water quality. MAWSS completed the required 24 months of LT2 sampling in March 2017. Based on the results, additional treatment is not required, but MAWSS will continue to monitor for *Cryptosporidium, Giardia,* and *E. coli.*

** Most Probable Number *** Not required to test, but included in study for additional data.

Contaminants Tested For, But Not Detected

MAWSS tests all primary contaminants which include microbiological contaminants, radionuclides, inorganic chemicals, organic chemicals (synthetic and volatile), and disinfection by-products. In addition, MAWSS tests for secondary contaminants, unregulated synthetic and volatile organic chemicals, and PCBs.

1,1-Dichloroethane	4-Chlorotoluene	Isopropylbenzene
1,1-Dichloropropene	Aldicarb	Manganese
1,1,1,2-Tetrachloroethane	Aldicarb sulfone	Methyl-tert-butyl ether
1,1,2,2-Tetrachloroethane	Aldicarb sulfoxide	Methomyl
trans-1,2-Dichloroethene	Aldrin	Metolachlor
trans-1,3-Dichloropropene	Bromobenzene	Metribuzin
1,2,3-Trichlorobenzene	Bromochloromethane	Naphthalene
1,2,3-Trichloropropane	Bromoform	n-Butylbenzene
1,2,4-Trimethylbenzene	Bromomethane (Methyl bromide)	Nickel
1,2-Dichloroethane	Butachlor	n-Propylbenzene
1.2-Dichlorobenzene	Carbaryl	o-Xylene
1,3,5-Trimethylbenzene	Chloroethane	p-Isopropyltoluene
1,3-Dichlorobenzene	Chloromethane	Propachlor
1,3-Dichloropropane	Dalapon	sec-Butylbenzene
1,3-dimethyl-2-nitrobenzene	Dicamba	Silver
1,4-Dichlorobenzene	Dibromomethane	tert-Butylbenzene
cis-1,3-Dichloropropene	Dichlorodifluoromethane	Trichlorofluoromethane
2,2-Dichloropropane	Dieldren	Triphenylphosphate
2-Chlorotoluene	Hexachlorobutadiene	Zinc
3-Hydroxycarbofuran	Iron	

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Disinfectant By-products: Chemicals that may form when disinfectants (such as chlorine) react with plant matter and other naturally occurring materials in the water. These by-products may pose health risks in drinking water.

Primary Drinking Water Regulations: Legally enforceable standards that apply to public water systems. These standards protect drinking water quality limiting the levels of specific contaminants that can adversely affect public health and which are known or anticipated to occur in public water supplies.

Secondary Drinking Water Standards: State enforceable standards regarding cosmetic effects (such as tooth or skin discoloration) or aesthetic effects (such as taste, odor, or color) of drinking water.

Giardia and Cryptosporidium: There are two types of microscopic organisms that can cause illness in humans. There are many ways to come in contact with these organisms including contaminated foods, swimming pools, recreational water, day care centers, contact with contaminated soil, nursing homes, and drinking water. MAWSS is taking steps to ensure these organisms do not pose a problem in the drinking water. The treatment plants have multiple barriers of protection such as enhanced chemical coagulation, filtration, disinfection, and careful monitoring of turbidity to ensure the optimum removal of these organisms. The water in our system is tested routinely for *Cryptosporidium* and *Giardia*. Their presence in raw water is common, and we have discovered an occasional presence in raw water. We have never found *Cryptosporidium* and *Giardia* in the treated drinking water.

For more information about your water quality report, write:
Mobile Area Water & Sewer System
P.O. Box 180249
Mobile, AL 36618-0249

MAWSS Park Forest Plaza
4725 Moffett Road
Mobile, AL 36618

Telephone: 251-694-3100
Website: **www.mawss.com**

The Board meets on the first Monday of the month unless otherwise noted.

Call or visit our website for a schedule of meeting dates, times and agendas.

This report is available at
www.MAWSS.com/waterqualityreport.pdf