



THE CITY OF FLORENCE  
WATER DEPARTMENT

# 2017 Annual Water Quality Report

**The City of Florence Water/Wastewater Department** is pleased to provide you, our customer, our annual Water Quality Report for 2016. The City of Florence Water Department is committed to providing the residents of Florence and Lauderdale County with the safest and highest quality drinking water possible. Daily testing is done at our treatment facilities using sophisticated equipment and the most advanced procedures, and the water produced by the City of Florence Water Department meets or surpasses both state and federal standards for both appearance and safety. This annual "Water Quality Report", which is required by the Safe Drinking Water Act (SDWA), tells you where your water comes from, what tests by independent laboratories show about it, and other information you should know about your drinking water.

But, most importantly:

***The City of Florence's drinking water met or surpassed all federal and state drinking water standards during 2016.***

For information about how you can participate in decisions or for general information about your drinking water, call us at (256) 760-6490 or consult our web site at [www.florenceal.org](http://www.florenceal.org). Information can also be obtained from the U.S. Environmental Protection Agency (EPA) Web site at [www.epa.gov/safewater/](http://www.epa.gov/safewater/).

## Overview

The City of Florence's drinking water is supplied by surface water from the Tennessee River and Cypress Creek. Modern, state of the art surface water treatment facilities using the most up to date technology treats the water from these two sources. In addition, we pump ground water from two wells in the Killen and Center Star areas of Lauderdale County, which is blended with the treated surface water sources. The well sources supply these areas only in Killen.

The City of Florence utilizes mixing, flocculation, sedimentation and filtration in their treatment process. Also, chlorine is used for disinfection, fluoride for dental protection, and lime for pH treatment.

## New Treatment Process added in 2014

The MIEX system was added as a simple solution for meeting U.S. Environmental Protection Agency's (EPA) disinfection by-product (DBP) removal by employing a continuous ion exchange process. The process removes dissolved organic carbon (DOC) allowing for improved drinking water quality and regulatory compliance.

## What do these tables mean?

It's easy! Our water is tested to assure that it is safe and healthy. The **Table of Primary Contaminants** provides an overview of some primary contaminants that are known to pose a health risk to humans. In the **Table of Detected Contaminants**, the column marked Amount Detected shows the highest test results during the year. Sources of Contaminant Level show where this substance usually originates. The **Table of Secondary Contaminants** lists regulated contaminants that may cause cosmetic or aesthetic effects in drinking water. Columns headed MCL and MCLG refer to:

**Action Level:** the concentration of a contaminant that triggers treatment or other requirements which a water system must follow.

**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 technology.

**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.

*At high levels some primary contaminants are known to pose a health risks to humans. These tables provides a quick glance of any primary contaminant detections.*

## Tables of Primary Contaminants

| Contaminant                                 | MCL  | Amount Detected |
|---|------|-----------------|
| <b>Bacteriological</b>                      |      |                 |
| Total Coliform Bacteria                     | < 5% | 4%              |
| Turbidity                                   | TT   | .24             |
| Fecal Coliform and E. Coli                  | 0    | 0               |
| Fecal Indicators (enterococci or coliphage) | TT   | 0               |

| Contaminant                    | MCL | Amount Detected |
|--------------------------------|-----|-----------------|
| <b>Radiological</b>            |     |                 |
| Beta/photon emitters (mrem/yr) | 4   | ND              |
| Alpha emitters (pCi/l)         | 15  | ND              |
| Combined radium (pCi/l)        | 5   | ND              |
| Uranium                        | 30  | ND              |

| Contaminant               | MCL  | Amount Detected |
|---------------------------|------|-----------------|
| <b>Inorganic</b>          |      |                 |
| Antimony                  | .006 | ND              |
| Arsenic                   | .01  | ND              |
| Asbestos (MFL)            | 7    | ND              |
| Barium                    | 2    | ND              |
| Beryllium                 | .004 | ND              |
| Bromate                   | .010 | ND              |
| Cadmium                   | .005 | ND              |
| Chloramines               | 4    | ND              |
| Chlorine                  | 4    | 2.2             |
| Chlorine Dioxide          | .8   | ND              |
| Chlorite                  | 1    | ND              |
| Chromium                  | .1   | ND              |
| Copper                    | .050 | ND              |
| Cyanide                   | .2   | ND              |
| Fluoride                  | 4    | 1.17            |
| Lead                      | .015 | ND              |
| Mercury                   | .002 | ND              |
| Nitrate                   | 10   | .65             |
| Nitrite                   | 1    | ND              |
| Total Nitrate and Nitrite | 10   | ND              |
| Selenium                  | .05  | ND              |
| Thallium                  | .002 | ND              |

| Contaminant                | MCL       | Amount Detected | Contaminant                    | MCL    | Amount Detected |
|----------------------------|-----------|-----------------|--------------------------------|--------|-----------------|
| <b>Organic Chemicals</b>   |           |                 |                                |        |                 |
| Acrylamide                 | TT        | ND              | Ethylbenzene                   | .7     | ND              |
| Alachlor                   | .002      | ND              | Ethylene dibromide             | .00005 | ND              |
| Atrazine                   | .003      | ND              | Glyphosate                     | .7     | ND              |
| Benzene                    | .005      | ND              | HAA5                           | 60     | 33.6            |
| Benzo(a)pyrene[PAHs]       | .0002     | ND              | Heptachlor                     | .0004  | ND              |
| Carbofuran                 | .04       | ND              | Heptachlor epoxide             | .0002  | ND              |
| Carbon Tetrachloride       | .005      | ND              | Hexachlorobenzene              | .001   | ND              |
| Chlordane                  | .002      | ND              | Hexachlorocyclopentadiene      | .05    | ND              |
| Chlorobenzene              | .1        | ND              | Lindane                        | .0002  | ND              |
| 2,4-D                      | .070      | ND              | Methoxychlor                   | .04    | ND              |
| Dalapon                    | .2        | ND              | Oxamyl [Vydate]                | .2     | ND              |
| Dibromochloropropane       | .0002     | ND              | Pentachlorophenol              | .001   | ND              |
| o-Dichlorobenzene          | .6        | ND              | Picloram                       | .5     | ND              |
| p-Dichlorobenzene          | .075      | ND              | Polychlorinated biphenyls PCBs | .0005  | ND              |
| 1,2-Dichloroethane         | .005      | ND              | Simazine                       | .004   | ND              |
| 1,1-Dichloroethylene       | .007      | ND              | Styrene                        | .1     | ND              |
| cis-1,2-Dichloroethylene   | .07       | ND              | Tetrachloroethylene            | .005   | ND              |
| trans-1,2-Dichloroethylene | .1        | ND              | Toluene                        | 1      | ND              |
| Dichloromethane            | .005      | ND              | TOC                            | TT     | 1.15            |
| 1,2-Dichloropropane        | .005      | ND              | TTHM                           | 80     | 49.8            |
| Di-(2-ethylhexyl)adipate   | .4        | ND              | Toxaphene                      | .003   | ND              |
| Di(2-ethylhexyl)phthalate  | .006      | ND              | 2,4,5-TP (Silvex)              | .05    | ND              |
| Dinoseb                    | .007      | ND              | 1,2,4-Trichlorobenzene         | .07    | ND              |
| Dioxin[2,3,7,8-TCDD]       | .00000003 | ND              | 1,1,1-Trichloroethane          | .2     | ND              |
| Diquat                     | .02       | ND              | 1,1,2-Trichloroethane          | .005   | ND              |
| Endothall                  | .1        | ND              | Trichloroethylene              | .005   | ND              |
| Endrin                     | .002      | ND              | Vinyl Chloride                 | .002   | ND              |
| Epichlorohydrin            | TT        | ND              | Xylenes                        | 10     | ND              |

## Key to Tables

**AL** = Action Level  
**MCL** = Maximum Contaminant Level  
**MCLG** = Maximum Contaminant Level Goal  
**NTU** = Nephelometric Turbidity Units

**ND** = Not Detected  
**pCi/l** = picocuries per liter (a measure of radioactivity)  
**ppm** = parts per million, milligrams per liter (mg/l)  
**ppb** = parts per billion, micrograms per liter (ug/l)

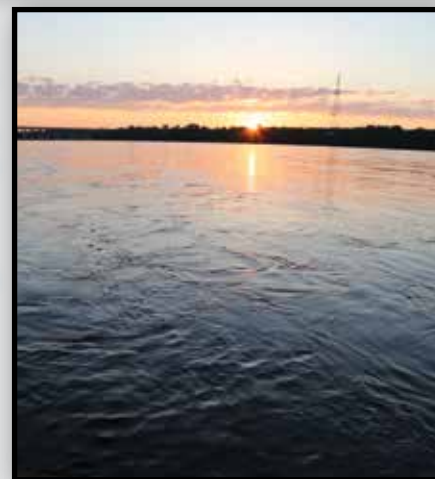
**TT** = Treatment Technique, a required process intended to reduce the level of a contaminant in drinking water.

## Table of Secondary Contaminants

| Contaminant            | MCL  | Unit                  | Amount Detected |
|------------------------|------|-----------------------|-----------------|
| Alkalinity, Total      | NA   | ppm                   | 68.6            |
| Aluminum               | 0.20 | ppm                   | 0.098           |
| Calcium                | NA   | ppm                   | 26.6            |
| Carbon Dioxide         | NA   | ppm                   | 1.6             |
| Chloride               | 250  | ppm                   | 29.1            |
| Color                  | 15.0 | units                 | <5.0            |
| Foaming Agents (MBAs)  | 0.50 | ppm                   | <.05            |
| Hardness               | NA   | ppm                   | 87.0            |
| Iron                   | 0.30 | ppm                   | <.050           |
| Magnesium              | NA   | ppm                   | 5.22            |
| Manganese              | 0.05 | ppm                   | <0.010          |
| Nickel                 | .01  | ppm                   | <0.050          |
| Odor                   | 3.0  | threshold odor number | <1              |
| pH                     | NA   | ppm                   | 6.53            |
| Silver                 | 0.10 | ppm                   | <0.050          |
| Sodium, as Na          | NA   | ppm                   | 10.8            |
| Sulfate                | 500  | ppm                   | 10.9            |
| Specific Conductance   |      | umhos/cm              | 250             |
| Total Dissolved Solids | 500  | ppm                   | 112             |
| Zinc                   | 5.0  | ppm                   | <0.050          |
| Langelier Index        | NA   |                       | -2.16           |



Featured in this year's report are photos of Wilson Dam. Construction of the dam began in 1918 and was completed in 1924. The dam is 137 feet high and stretches 4,541 feet across the Tennessee River. Wilson Dam is a hydroelectric facility with 21 generating units. Photography by L. Wray Dillard.



## Table of Detected Contaminants

| Contaminant  | MCLG | MCL | Range       | Violation | Amount Detected      | Likely Sources of Contaminant(s)  |
|--|------|-----|-------------|-----------|----------------------|---|
| <b>Bacteriological — 01/01/2016 - 12/31/2016</b>     |      |     |             |           |                      |   |
| Total Coliform Bacteria                              | 0    | <5% |             | No        | 1% Present or Absent | Naturally present in the environment  |
| Turbidity  | 0    | TT  | 0.01 - 0.20 | No        | 0.24 NTU             | Soil runoff   |
| <b>Inorganic Chemicals — 01/01/2016 - 12/31/2016</b> |      |     |             |           |                      |   |
| Chlorine   | 4    | 4   | .2 - 2.2    |           | 2.2 ppm              | Disinfection  |
| Fluoride   | 4    | 4   | 0.0 - 1.17  | NO        | 1.17 ppm             | Erosion of natural deposits; water additive which promotes strong teeth; discharge from fertilizer and aluminum factories |
| Nitrate  | 10   | 10  | .55 - .65   | NO        | .65 ppm              | Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits                               |
| <b>Inorganic Chemicals — 01/01/2016 - 12/31/2016</b> |      |     |             |           |                      |   |
| HAA5   | NA   | 60  | 11.6 - 33.6 | NO        | 36.6 ppb             | By-product of drinking water chlorination   |
| TOC  | NA   | TT  | .5 - 1.5    | NO        | 1.5 ppb              | Naturally present in the environment  |
| TTHM   | NA   | 80  | 18.4 - 49.8 | NO        | 49.8 ppb             | By-product of drinking water chlorination   |

**Unregulated Contaminants** The City of Florence Water Department did not test, nor was it required to test, for Radon during 2015. However, there are other unregulated contaminants that were tested for in 2015 which can be found in this annual report.

**Asbestos and Dioxin** 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 is not required.

**Source Water Assessments** The City of Florence Water Department has performed source water assessments for the Wilson Lake Treatment Plant located on the Wilson Lake (Tennessee River) and the Cypress Creek Treatment Plant located on Cypress Creek. In addition, assessments have been completed for Peck Lane and Houston Hill's wells located in the Killen and Center Star areas. This information may be viewed in the Water Department office between the hours of 8:00 am to 5:00 pm, Monday through Friday. Appointments for reviewing are recommended.

**CRYPTOSPORIDIUM & GIARDIA** Cryptosporidium and Giardia are microscopic organisms found in surface water throughout the United States. Although filtration removes Cryptosporidium and Giardia, the most commonly-used filtration methods cannot guarantee 100 percent removal. Ingestion of may cause an abdominal infection. Symptoms of infection include nausea, diarrhea and abdominal cramps. Most healthy individuals can overcome the disease within a few weeks. However, immuno-compromised individuals, infants and small children, and the elderly are at greater risk of developing life-threatening illness. We encourage immuno-compromised individuals to consult their doctor regarding appropriate precautions to take to avoid infection. Cryptosporidium and Giardia must be ingested to cause disease, and it may be spread through means other than drinking water. Cryptosporidium and Giardia in at Florence’s treatment plants are removed and/or treated by effective filtration and disinfection processes.

We monitored the untreated source waters for both Cryptosporidium and Giardia in 2016. The results are below:

| Date Analysed | Analysis Results<br>Cypress Creek |                  | Analysis Results<br>Wilson Lake |                  |
|---------------|-----------------------------------|------------------|---------------------------------|------------------|
|               | Cryptosporidium                   | Giardia          | Cryptosporidium                 | Giardia          |
| 01/2016       | 0.09 organisms/L                  | 0.27 organisms/L | 0.00 organisms/L                | 0.00 organisms/L |
| 02/2016       | 0.14 organisms/L                  | 1.60 organisms/L | 0.44 organisms/L                | 0.00 organisms/L |
| 03/2016       | 0.00 organisms/L                  | 1.80 organisms/L | 0.00 organisms/L                | 0.10 organisms/L |
| 04/2016       | 0.00 organisms/L                  | 0.29 organisms/L | 0.00 organisms/L                | 0.10 organisms/L |
| 05/2016       | 0.00 organisms/L                  | 0.39 organisms/L | 0.09 organisms/L                | 0.00 organisms/L |
| 06/2016       | 0.00 organisms/L                  | 0.67 organisms/L | 0.00 organisms/L                | 0.00 organisms/L |
| 07/2016       | 0.00 organisms/L                  | 1.00 organisms/L | 0.00 organisms/L                | 0.00 organisms/L |
| 08/2016       | 0.00 organisms/L                  | 0.19 organisms/L | 0.20 organisms/L                | 0.00 organisms/L |
| 09/2016       | 0.00 organisms/L                  | 0.19 organisms/L | 0.20 organisms/L                | 0.00 organisms/L |
| 10/2016       | 0.10 organisms/L                  | 1.20 organisms/L | 0.10 organisms/L                | 0.00 organisms/L |
| 11/2016       | 0.00 organisms/L                  | 0.40 organisms/L | 0.00 organisms/L                | 0.00 organisms/L |
| 12/2016       | 0.10 organisms/L                  | 0.78 organisms/L | 0.10 organisms/L                | 0.00 organisms/L |

**LEAD AND COPPER RULE MONITORING** Lead and copper Rule (LCR) was developed to protect public health by minimizing lead and copper levels in drinking water. The LCR established an action level of 0.015 mg/l for lead and 1.3 mg/l for copper based on the 90th percentile level of tap water samples collected. Lead and copper are sampled on a mandated three year testing cycle with sampling conducted at customer’s tap. Our 90th percentile for lead was <.005 mg/L. Our 90th percentile for copper was 0.115 mg/L.

**LEAD** 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. The City of Florence Water Department 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 <https://www.epa.gov/ground-water-and-drinking-water/basic-information-about-lead-drinking-water>.

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## Table of Non-Detected Substances

*Florence Water Department tested for the following substances in 2016 but none were detected.*

|                            |                           |
|----------------------------|---------------------------|
| Bis(2-ethylhexyl)phthalate | trans-1,2-Dichloroethene  |
| Bromobenzene               | 1,3-Dichloropropane       |
| Bromochloromethane         | 2,2-Dichloropropane       |
| Bromoform                  | 1,1-Dichloropropene       |
| Bromomethane               | 1,3-Dichloropropene       |
| n-Butylbenzene             | Hexachlorobutadiene       |
| sec-Butylbenzene           | Isopropylbenzene          |
| tert-Butylbenzene          | 4-Isopropyltoluene        |
| Chloroethane               | Methyl tert-butyl ether   |
| Chloromethane              | Naphthalene               |
| 2-Chlorotoluene            | n-Propylbenzene           |
| 4-Chlorotoluene            | 1,1,1,2-Tetrachloroethane |
| Dibromomethane             | 1,1,2,2-Tetrachloroethane |
| 1,2 -Dichlorobenzene       | Tetrachloroethene         |
| 1,3 -Dichlorobenzene       | Trichlorofluoromethane    |
| 1,4 - Dichlorobenzene      | Trichloroethene           |
| Dichlorodifluoromethane    | 1,2,3-Trichlorobenzene    |
| 1,1-Dichloroethane         | 1,2,3-Trichloropropane    |
| 1,1-Dichloroethene         | 1,2,4-Trimethylbenzene    |
| cis-1,2-Dichloroethene     | 1,3,5-Trimethylbenzene    |

of 8:00 am to 5:00 pm, Monday through Friday. Appointments for reviewing are recommended.

## Required Additional Health Information

To ensure that tap water is safe to drink, EPA prescribes limits on the amount of certain contaminants in water provided by public water systems. FDA regulations establish limits for contaminants in bottled water.

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).

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 radioactive material, and can pick up substances resulting from the presence of animals or from human activity. Contaminants that may be present in source water include:

- (A) Microbiological contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.
- (B) Inorganic contaminants, such as salts and metals, which can be natural occurring or result from urban storm runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.
- (C) Pesticides and herbicides, which may come from a variety of sources such as agricultural, storm water runoff, and residential uses.
- (D) Organic chemical contaminants, including synthetic and volatile organics, which are by-products of industrial processes and petroleum production, and can also come from gas stations, urban storm water runoff and septic systems.
- (E) 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 regulations establish limits for contaminants in bottled water, which must provide the same protection for public health.

*Some people may be more vulnerable to contaminants in drinking water than is 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 infection by Cryptosporidium are available from the Safe Drinking Water Hotline (800-426-4791).*

## National Primary Drinking Water Regulation Compliance

This 2016 Annual Water Quality Report was prepared by Michael Doyle and Gina Hall of the City of Florence Water/Wastewater Department using technical assistance and guidance from the American Water Works Association (AWWA), the National Rural Water Association (NRWA), United States Environmental Protection Agency (USEPA), and the Alabama Department of Environmental Management (ADEM).

We will be pleased to answer any questions about the City of Florence Water Department and our water quality. Call our offices at (256) 760-6490 on Monday through Friday between the hours of 8:00 a.m. and 5:00 p.m. The City of Florence Water/Wastewater Department operates under the authority of the Mayor and Council of the City of Florence, Alabama. The City Council meets at 5:00 p.m. on every 1st and 3rd Tuesday of each month at 110 W. College Street.

Learn more about the City of Florence Water Department water system at...

[www.florenceutilities.com/Gas\\_Water/](http://www.florenceutilities.com/Gas_Water/)





## City of Florence, Alabama

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*Florence Water/Wastewater Department*

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