

# **State of Texas Public Drinking Water Program 2016 Annual Compliance Report**



Mansfield Dam, Austin, TX

**Texas Commission on Environmental Quality  
Office of Water  
Water Supply Division**

**July 1, 2017**

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## Introduction

The Texas Commission on Environmental Quality (TCEQ) administers the Public Drinking Water Program in Texas under primacy authority from the United States Environmental Protection Agency (EPA). Section 1414(c)(3) of the Safe Drinking Water Act (SDWA) requires that each state that has been granted primacy prepare an annual report on violations of national primary drinking water regulations within the state, make the report readily available to the public, and submit it to the EPA. The TCEQ 2016 Annual Compliance Report fulfills this responsibility for Texas, and includes violations of maximum contaminant levels (MCLs), maximum residual disinfectant levels (MRDLs), treatment technique requirements, variances and exceptions, significant monitoring and consumer notification violations.

Each quarter, primacy States submit data to the Federal Safe Drinking Water Information System (SDWIS/FED), an automated database maintained by EPA. This report is based on data retrieved from the Texas installation of SDWIS/STATE. This report contains data from the following time periods:

- The beginning date of a given violation compliance period on or before December 31, 2016.
- The ending date of a given violation compliance period on or after January 1, 2016.

By using these criteria, some violations which began prior to calendar year 2016 are included in this report.

## Definitions and Terms

The following are definitions and terms used in this report.

**Public Water System** - A public water system (PWS), as defined by the State of Texas, is a system that provides water via piping or other constructed conveyances for human consumption to at least 15 service connections or serves at least 25 people for at least 60 days each year. There are three types of PWSs:

- Community PWSs such as towns or other communities where people live.
- Non-Transient Non-Community PWSs such as schools or factories where people work but do not live.
- Transient Non-Community systems -- such as rest stops, parks, and restaurants --where people frequently come and go.

For this report, the acronym PWS means systems of all types unless specified in greater detail.

**Maximum Contaminant Level** - Under the Safe Drinking Water Act (SDWA), the EPA sets national limits on contaminant levels in drinking water to ensure that the water is safe for human consumption. These limits are known as Maximum Contaminant Levels (MCLs).

**Maximum Residual Disinfection Level** - The EPA sets national limits on residual disinfection levels in drinking water to reduce the risk of exposure to disinfectant byproducts formed when PWSs add chemical disinfection for either primary or residual treatment. These limits are known as Maximum Residual Disinfectant Levels (MRDLs).

**Treatment Techniques** - For some regulations, the EPA establishes treatment techniques (TTs) in lieu of an MCL to control unacceptable levels of certain contaminants. For example, treatment techniques have been established for viruses, bacteria, and turbidity.

**Variances and Exemptions** - The State of Texas does not grant variances or exemptions.

**Monitoring-** A PWS is required to monitor and verify that the levels of contaminants present in the water do not exceed the MCL. If a PWS fails to have its water tested as required or fails to report test results correctly to the primacy agency, a monitoring/reporting violation occurs.

**Sampling -** The TCEQ collects chemical compliance samples for PWSs using a third party contractor, Antea USA. The samples collected include inorganic and organic chemicals, disinfection by-products and radionuclides. These samples are collected either at the entry point or in the distribution system. Using a third party to collect samples ensures greater quality assurance, unbiased sample results and a very high collection rate. In 2015, 99.9% of samples scheduled were collected, or the sample sites were accounted for as inactive or unavailable for sampling. The PWSs comply with the chemical compliance sampling requirement by paying the lab analysis expense.

PWSs are required to collect additional compliance samples. All public water systems are responsible for the routine collection of bacteriological samples and disinfection residual data from their distribution system. Most water systems have to perform sampling for compliance for the Lead and Copper Rule. Systems that utilize a ground water source must monitor their raw well water when applicable. Systems that utilize surface water or ground water under the influence of surface water must monitor routinely for turbidity and are also required to perform source water monitoring for *Cryptosporidium*. Also, systems that use specific treatments (such as chlorine dioxide or ozone) in their drinking water production are required to perform specialized monitoring.

**Significant Monitoring Violations -** For this report, significant monitoring violations are defined as any significant monitoring violation that occurred during the calendar year of the report. A significant monitoring violation, with rare exceptions, occurs when no samples were taken or no results were reported during a compliance period.

**Consumer Notification -** Every Community water system is required to deliver to its customers a brief annual water quality report, referred to as the Consumer Confidence Report (CCR). This report is to include some educational material, and will provide information on the source water, the levels of any detected contaminants, and compliance with drinking water regulations.

**Significant Consumer Notification Violations -** For this report, a significant consumer notification violation occurred if a community water system completely failed to provide its customers the required annual water quality report. This type of violation is designated as “CCR Failure to Report” in SDWIS/STATE.

**Public Notification -** Public Notification is intended to ensure that consumers will always know if there is a problem with their drinking water. These notices immediately alert consumers if there is a serious problem with their drinking water that may pose a risk to public health. They also notify customers if their water does not meet drinking water standards, the water system fails to test its water, or if the system has been granted a variance (use of less costly technology) or an exemption (more time to comply with a new regulation). The stipulation for variances and exemptions is not applicable in Texas; Texas does not grant variances or exemptions.

## Public Water Systems in Texas

As of June 28th, 2017, the State of Texas regulates 6,952 PWSs, providing drinking water to 27,456,677 customers.

- Approximately 26,672,668 people receive drinking water from 4,654 Community water systems.
- Approximately 505,163 people receive drinking water from 877 Non-Transient Non-Community water systems.

- Approximately 278,846 people receive drinking water from 1,421 Transient Non-Community water systems.

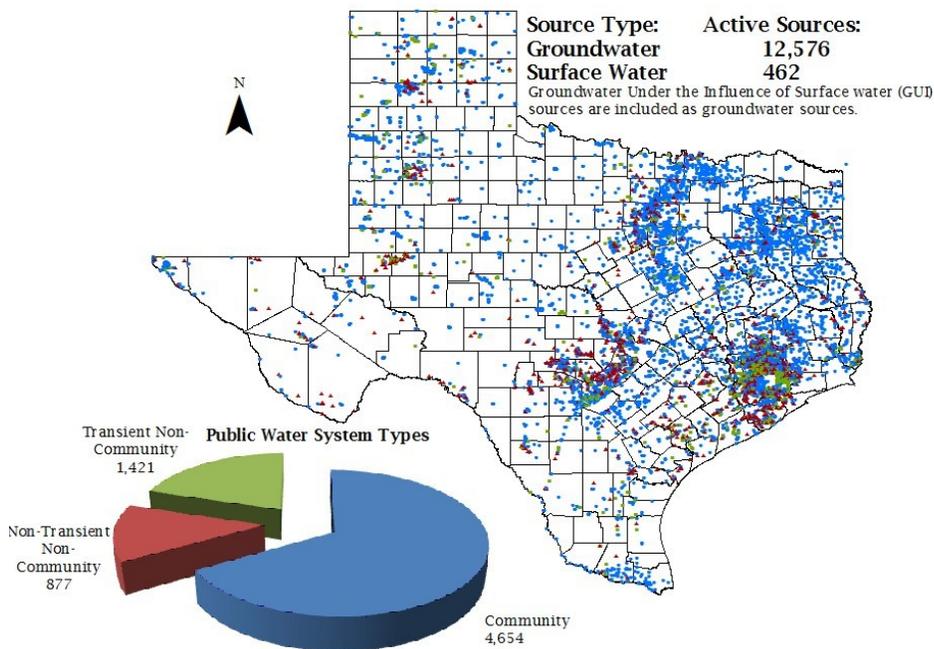
State regulations require all PWSs in Texas to disinfect their drinking water. All systems must properly disinfect water before it is distributed to any customer and must maintain acceptable disinfectant residuals within their distribution system. Systems are required to maintain a disinfectant residual concentration of at least 0.2 milligrams per liter (mg/L) of free chlorine or mg/L of chloramine (chlorine + ammonia) in the water entering their distribution system as well as throughout the distribution system.

All PWSs that utilize surface water or ground water under the influence of surface water as a drinking water source, must use filtration as a treatment in their potable water production. Filtration is used along with other treatments as applicable.

## Drinking Water Sources

Sources for drinking water within Texas include both groundwater and surface water originating from numerous aquifers, rivers, and reservoirs throughout the state. An illustration of public drinking water sources in Texas is shown below in Figure 1.

**Figure 1. Active PWS Sources in Texas**



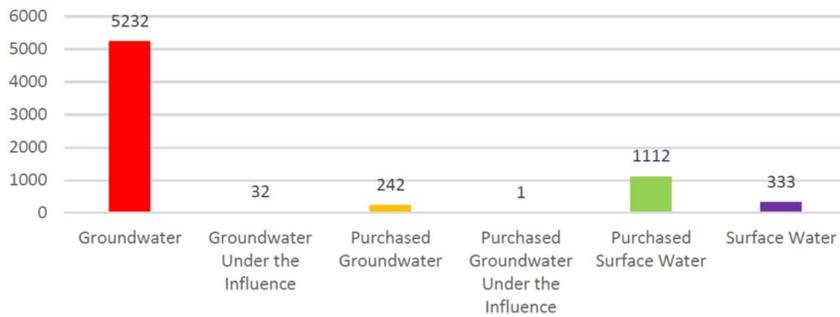
Primary source types for PWSs in Texas include the following

- Groundwater - wells that withdraw water from aquifers
- Purchased Groundwater - water purchased from another PWS where the source is one or more wells
- Surface water - intakes that withdraw water from creeks, rivers, streams, lakes, and reservoirs
- Purchased surface water - water is purchased from another PWS where the source is one or more surface water intakes

- Groundwater Under the Influence of Surface Water - wells that withdraw water from aquifers where surface water may be present
- Purchased Groundwater Under the Influence of Surface Water - water is purchased from another PWS where the source is one or more aquifers where surface water may be present

The number of PWSs by primary source type are included in Figure 2.

**Figure 2. Number of PWSs by Source Type**



## Public Water System Size

The EPA defines water system size based on the following population classifications:

- Very small systems - serve 25 to 500 people
- Small systems - serve 501 to 3,300 people
- Medium systems - serve 3,301 to 10,000 people
- Large systems - serve 10,001 to 100,000 people
- Very Large systems - serve more than 100,000 people

The population served by public water systems in Texas is shown in Table 1 below.

**Table 1. Texas PWS Population by EPA Classification**

Population Served	EPA Classification	Number of PWSs	Total Population Served
25-500	Very Small	4,145	671,846
501-3,300	Small	1,778	2,578,515
3,301-10,000	Medium	693	3,919,844
10,001-100,000	Large	300	7,868,831
Over 10,000	Very Large	36	12,417,641
	<b>Total</b>	<b>6,695</b>	<b>27,456,677</b>

## Alternative Water Sources

With Texas' population expected to reach almost 46 million by the year 2060 as well as the lasting effects of the drought, Texans have had to plan far in advance to sustain their communities,

businesses, industries, and environment. Because of these challenges, PWSs have had to begin to utilize less conventional sources of water.

**Desalination:** In the search to find alternate water sources desalination continues to gain attention as some communities seek to treat saline groundwater, or brackish water, to make it potable. Brackish water sources often need treatment to be used as drinking water, and desalination is the most typical treatment utilized by water systems. For this reason, the agency initiated rulemaking to streamline construction approval for PWSs asking to conduct brackish- water desalination.

In July 2015, after extensive input from the regulated community and interested stakeholders, the rules for desalination using either reverse osmosis (RO) or nanofiltration (NF) membranes became effective. In the past, the use of RO membranes or other desalination techniques required either a site-specific pilot test, a pilot test at a site with similar water quality, or full- scale performance data at a site with similar water quality. The streamlined approach in the new rules allows the use of desalination technologies without an exception request, which is required when approving the use of innovative and alternative treatment technologies. To further assist communities with decreased water supplies, the TCEQ offers concurrent reviews of designs and computer models.

**Reuse/reclaimed water:** As water systems search for new sources of water, some PWSs began to explore strategies not previously considered. One alternative involves not just reclaiming effluent from municipal wastewater treatment plants for non-potable uses such as irrigation and industry, but also additional treatment to remove chemical and microbiological contaminants found in effluent for direct potable reuse. The TCEQ has engineers and scientists with the expertise to guide PWSs through the process of selecting innovative treatment technologies and receiving approval for these technologies while ensuring the treated water is safe for human consumption. Texas is the first state to have Direct Potable Reuse (DPR).

## 2016 Compliance Results

Annual compliance information was determined using the State of Texas Safe Drinking Water Information System (SDWIS) State, version 3.33.

### Health-Based Standards

In 1974 Congress passed the Safe Drinking Water Act. This law requires EPA to determine the level of contaminants in drinking water at which no adverse health effects are likely to occur. These non-enforceable health goals, based solely on possible health risks and exposure over a lifetime, with an adequate margin of safety, are called maximum contaminant level goals (MCLG). Contaminants are any physical, chemical, biological or radiological substances or matter in water. EPA sets MCLGs based on the best available science to prevent potential health problems.

For most contaminants, EPA sets an enforceable regulation called a maximum contaminant level (MCL) based on the MCLG. MCLs are set as close to the MCLGs as possible, considering cost, benefits and the ability of PWSs to detect and remove contaminants using suitable treatment technologies. When there is no reliable method that is economically and technically feasible to measure a contaminant at particularly low concentrations, a treatment technique is set rather than an MCL. A treatment technique is an enforceable procedure or level of technological performance which PWSs must follow to ensure control of a contaminant. States may set a more stringent MCL or treatment technique level for pathogens and indicators in drinking water than EPA.

Health-based contaminants are those that may pose an acute or long-term risk to human health if they are found in drinking water. These contaminants include: fecal coliform bacteria, E. coli, turbidity, nitrate, nitrite, chlorine dioxide, inorganic chemicals, organic chemicals, disinfection byproducts, radionuclides and disinfectants.

Total coliforms, fecal coliforms, E. coli and turbidity are indicators that inadequately treated water may contain disease-causing organisms. Pathogens include various types for bacteria, viruses, protozoan parasites and other organisms. Indicators are physical, chemical, or other parameters whose presence at a level outside of specified limits may reflect a problem in the treatment process or in the integrity of the distribution system. These pathogens can cause diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a special health risk for infants, young children, and people with severely compromised immune systems.

Nitrate and nitrite contamination can occur from several sources: the natural decay of organic materials such as leaves and crop residue, use of commercial fertilizers, contamination by human sewage and wastes from farm animals, and the nitrification of ammonia in the treatment and distribution system. Excessive levels of nitrate and nitrite in drinking water can cause serious illness and sometimes death in infants less than six months of age and may also cause adverse health effects in pregnant women through the risk of miscarriage and in people with specific metabolic diseases.

Chlorine dioxide is a chemical added to drinking water for the purposes of microbial disinfection and oxidation of dissolved organic carbon to reduce formation of disinfection byproducts. Some infants, young children and pregnant women who drink water containing chlorine dioxide in excess of the Maximum Residual Disinfection Level (MRDL) could experience nervous system effects.

Inorganic contaminants can leach into drinking water after dissolving from naturally-occurring minerals in the ground, or from runoff from industrial sources or landfills. Lead and copper enter drinking water primarily through plumbing materials. Exposure to lead and copper may cause health problems ranging from stomach problems to brain damage. Lead and copper levels are controlled by treatment techniques and regulated by action level.

Organic contaminants come from petroleum solvents, paint removers, degreasers, cleaning fluids, pesticides, gasoline, electrical transformers, manufacturing processes, chemical production, byproducts from disinfection, the production of plastics, agricultural runoff, improper waste disposal, and improper handling and storage techniques. These contaminants may damage organs such as the heart, liver, and kidneys, damage the central nervous and immune systems, and cause cancer.

Disinfection byproducts are organic chemicals that form as a result of adding disinfectant to water containing organic matter. Trihalomethane, haloacetic acids, chlorite and bromate are byproducts of disinfection. These contaminants may damage organs such as the kidneys and liver, damage the cardiovascular system and central nervous system, and are sometimes associated with high blood pressure and cancer.

Radionuclides include radium and uranium, which occur naturally in some ground water due to geological formations, particularly in deeper aquifers. Radionuclide contaminants may cause cancer.

Disinfectants are chemicals added to drinking water during treatment to provide disinfection at the treatment plant and in the distribution system. If disinfectants are not dosed and managed appropriately, they may cause health effects from chlorine and chloramines which can include irritating effects to the eyes and nose, stomach discomfort, and (chloramine only) anemia.

Chlorine dioxide can cause nervous system effects and anemia.

To find more information regarding drinking water contaminants regulated by the EPA, and their potential health effects, go to the following website:

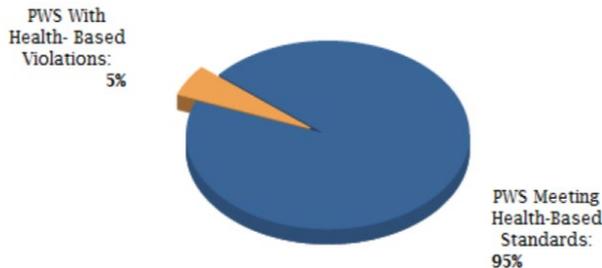
<http://water.epa.gov/dwstandardsregulations/>

## Health-Based Standards Results

For 2016, health-based standards were met by 95% of the 6,952 PWS in the State of Texas. The percentage of total population served by PWSs meeting health-based standards was 96%.

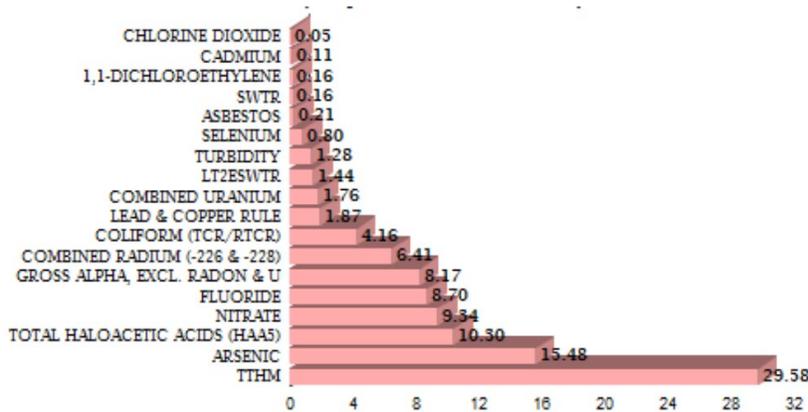
Figure 3 below shows the percentage of PWSs which are in compliance with health-based standards.

**Figure 3. Percent of PWSs in Compliance with Health-Based Standards**



Maximum Contaminant Level and Treatment Technique Rule violations, as a percentage of total health-based violations, are shown in Figure 4 below.

**Figure 4. Percent of Health-Based Standards Violation, by Contaminant/Rule**



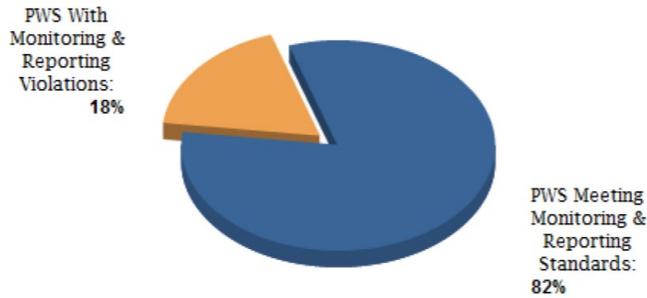
## Significant Monitoring and Reporting Violations

Monitoring and reporting regulations provide a mechanism to ensure that Public Water Systems (PWS) evaluate contaminants in order to meet health-based standards. When a system does not monitor for contaminants in accordance with associated compliance periods, consumers and primacy agencies do not know whether the water being served is meeting health-based standards.

For 2016, 82% of the 6,952 PWSs in Texas were in compliance with major monitoring and reporting regulations. The total population served by PWSs meeting monitoring and reporting regulations is 91%.

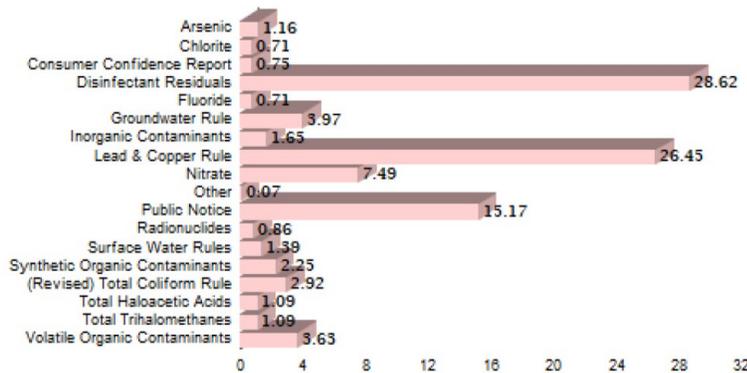
Figure 5 below shows the percent of PWSs which are in compliance with monitoring and reporting regulations.

**Figure 5. Percent of PWS in Compliance with Monitoring and Reporting Regulations**



Of the 18% of PWSs with monitoring and reporting violations, the percent by contaminant and rule are shown in Figure 6 below.

**Figure 6. Percent of Monitoring and Reporting Violations by Contaminant or Rule**



### Violations by Rule and Type

A summary of the number of violations by rule and type is shown below in Table 2. Violations included here are only those that did not return to compliance in 2016. See Appendix B for the total number of violations and those violations that returned to compliance.

**Table 2. PWS Violations by Rule & Type**

Rule	Violation Type Code	Violation Name	Violations Not RTC'd	Number of PWS in Violation
CCR	71	CCR REPORT	20	20
Chem	02	MCL, AVERAGE	477	96
Chem	01	MCL, SINGLE SAMPLE	174	55
Chem	03	MONITORING, ROUTINE MAJOR	483	184
DBP	02	MCL, LRAA	747	141
DBP	27	MONITORING, ROUTINE (DBP), Major	1,062	473
DBP	13	MRDL, ACUTE (CHL. DIOXIDE)	3	2
DBP	11	MRDL, NON-ACUTE (CHL. DIOXIDE)	1	1
GWR	34	MONITOR GWR TRIGGERED/ADDITIONAL, MAJOR	94	82
GWR	34	MONITOR GWR TRIGGERED/ADDITIONAL, MINOR	13	13

Rule	Violation Type Code	Violation Name	Violations Not RTC'd	Number of PWS in Violation
GWR	76	PUBLIC NOTICE RULE NOT LINKED VIOLATION	3	3
LCR	52	FOLLOW-UP OR ROUTINE TAP M/R (LCR)	510	484
LCR	51	INITIAL TAP SAMPLING (LCR)	15	15
LCR	56	INITIAL/FOLLOW-UP/ROUTINE SOWT M/R (LCR)	6	6
LCR	66	LEAD CONSUMER NOTICE (LCR)	611	525
LCR	57	OCCT/SOWT RECOMMENDATION/STUDY (LCR)	52	31
LCR	65	PUBLIC EDUCATION (LCR)	22	20
LCR	53	WATER QUALITY PARAMETER M/R (LCR)	125	46
PN	75	PUBLIC NOTICE RULE LINKED TO VIOLATION	403	229
Rad	02	MCL, AVERAGE	306	53
Rad	03	MONITORING, ROUTINE MAJOR	23	10
SWTR	42	FAILURE TO PROVIDE LT2 TREATMENT	27	4
SWTR	CT	LOW CT GREATER THAN 4 HOURS	3	2
SWTR	38	MONITORING, ROUTINE (IESWTR/LT1) MAJOR	37	19
SWTR	44	MONTHLY COMB	15	6
SWTR	43	SINGLE COMB FLTR EFFLUENT (IESWTR/LT1)	6	5
SWTR	T2	TX CFE TURBIDITY ABOVE 5.0 NTU	3	3
RTCR	1A	MCL, E. COLI, POS E. COLI (RTCR)	5	5
TCR	25	MONITORING (TCR), REPEAT MAJOR	8	8
TCR	23	MONITORING (TCR) ROUTINE MAJOR	70	26
RTCR	3A	MONITORING, ROUTINE, MAJOR (RTCR)	1,063	527
RTCR	3A	MONITORING, ROUTINE, MINOR (RTCR)	104	64

**Rule Abbreviations:**

- CCR Consumer Confidence Report
- PN Public Notice Rule
- Chem Chemical (Inorganics and Organics)
- Rad Radionuclides
- DBP Disinfection By-Products
- TCR Total Coliform Rule
- GWR Groundwater Rule
- RTCR Revised Total Coliform Rule
- HAA5 Haloacetic Acids
- TTHM Total Trihalomethanes
- LCR Lead and Copper Rule
- SWTR Surface Water Treatment Rules

## MCL/MRDL & Treatment Technique Violations

The following pages include summary tables for MCL/MRDL, Treatment Techniques, and Monitoring/Reporting. Violations included in these tables are only those that did not return to compliance in 2016.

**Table 2. Synthetic Organic Compounds**

Contaminant	MCL/MRDL (mg/L)	MCLs/MRDLs Violations	MCLs/MRDLs PWS in Violation	Significant M/R Violations	Significant M/R PWS in Violation
2,3,7,8-TCDD	3x10-8				
2,4,5-TP	0.05	0	0	15	9
2,4-D	0.07	0	0	15	9
ALACHLOR	0.002	0	0	25	18
ATRAZINE	0.003	0	0	25	18
BENZO(A)PYRENE	0.0002	0	0	25	18
CARBOFURAN	0.04	0	0	12	7
CHLORDANE	0.002	0	0	25	18
DALAPON	0.2	0	0	15	9
DI(2-ETHYLHEXYL) ADIPATE	0.4	0	0	25	18
DI(2-ETHYLHEXYL) PHTHALATE	0.006	0	0	25	18
DINOSEB	0.007	0	0	15	9
DIAQUAT	0.02				
ENDOTHALL	0.1				
ENDRIN	0.002	0	0	25	18
ETHELENE DIBROMIDE	0.00005	0	0	16	10
GLYPHOSATE	0.7	0	0		
HEPTACHLOR	0.004	0	0	25	18
HEPTACHLOR EPOXIDE	0.0002	0	0	25	18
HEXACHLOROBENZENE	0.001	0	0	25	18
HEXACHLOROCYCLOPENTADIENE	0.05	0	0	25	18
METHOXYCHLOR	0.04	0	0	25	18
OXAMYL	0.2	0	0	12	7
PENTACHLOROPHENOL	0.001	0	0	25	18
PICLORAM	0.5	0	0	15	9
SIMAZINE	0.004	0	0	25	18
TOTAL POLYCHLORINATED BIPHENYLS (PCB)	0.0005	0	0		
TOXAPHENE	0.003	0	0	25	18
<b>Subtotal</b>		<b>0</b>	<b>0</b>	<b>60</b>	<b>20</b>

**Table 3. Volatile Organic Compounds**

Contaminant	MCL/MRDL (mg/L)	MCLs/MRDLS Violations	MCLs/MRDLS PWS in Violation	Significant M/R Violations	Significant M/R PWS in Violation
1,1,1-TRICHLOROETHANE	0.2	0	0	100	86
1,1,2-TRICHLOROETHANE	0.005	0	0	100	86
1,1-DICHLOROETHYLENE	0.007	3	1	100	86
1,2,4-TRICHLOROBENZENE	0.07	0	0	100	86
1,2-DICHLOROETHANE	0.005	0	0	100	86
1,2-DICHLOROPROPANE	0.005	0	0	100	86
BENZENE	0.005	0	0	100	86
CARBON TETRACHLORIDE	0.005	0	0	100	86
CIS-1,2-DICHLOROETHYLENE	0.07	0	0	100	86
DICHLOROMETHANE	0.005	0	0	100	86
ETHYLBENZENE	0.7	0	0	100	86
O-DICHLOROBENZENE	0.6	0	0	100	86
STYRENE	0.1	0	0	100	86
TETRACHLOROETHYLENE	0.005	0	0	100	86
TOLUENE	1	0	0	100	86
TRANS-1,2-DICHLOROETHYLENE	0.1	0	0	100	86
TRICHLOROETHYLENE	0.005	0	0	100	86
VINYL CHLORIDE	0.002	0	0	100	86
XYLENES, TOTAL	10	0	0	100	86
<b>Subtotal</b>		<b>3</b>	<b>1</b>	<b>100</b>	<b>86</b>

**Table 4. Inorganic Compounds**

Contaminant	MCL/MRDL (mg/L)	MCLs/MRDLS Violations	MCLs/MRDLS PWS in Violation	Significant M/R Violations	Significant M/R PWS in Violation
ANTIMONY, TOTAL	0.006	0	0	4	3
ARSENIC	0.01	290	73	33	18
ASBESTOS	7 MFL	4	1	9	6
BARIUM	2	0	0	4	3
BERYLLIUM, TOTAL	0.004	0	0	4	3
CADMIUM	0.005	2	1	4	3

Contaminant	MCL/MRDL (mg/L)	MCLs/MRDLS Violations	MCLs/MRDLS PWS in Violation	Significant M/R Violations	Significant M/R PWS in Violation
CHROMIUM	0.1	0	0	4	3
CYANIDE	0.2	0	0	2	1
FLUORIDE	4	165	42	23	11
MERCURY	0.002	0	0	4	3
NITRATE	10	174	55	215	162
NITRATE-NITRITE	1	0	0	0	0
NITRITE	1	0	0	19	12
SELENIUM	0.05	15	4	7	5
THALLIUM, TOTAL	0.002	0	0	5	4
<b>Subtotal</b>		<b>648</b>	<b>142</b>	<b>397</b>	<b>177</b>

Inorganic compounds are often sampled as one or more group and Monitoring/Reporting violations are considered group violations. There were two inorganic compound groups with Monitoring/Reporting violations in 2016.

The Metals group contains the following: Arsenic, Total Antimony, Barium, Cadmium, Chromium, Mercury, Selenium, Total Thallium, Total Beryllium.

The Minerals group contains Fluoride.

Violations by Group:

- Metals: There were 4 violations for 3 PWSs.
- Minerals: There were 5 violations for 4 PWSs.

**Table 5. Radionuclides**

Contaminant	MCL/MRDLS	MCLs/MRDLS Violations	MCLs/MRDLS PWS in Violation	Significant M/R Violations	Significant M/R PWS in Violation
GROSS ALPHA, EXCL. RADON & U	5 pCi/L	120	31	23	10
COMBINED URANIUM	30 ug/L	33	9	23	10
COMBINED RADIUM (-226 & -228)	15 pCi/L	153	42	23	10
<b>Subtotal</b>		<b>306</b>	<b>53</b>	<b>23</b>	<b>10</b>

**Table 6. Total Coliform and Revised Total Coliform Rule**

Violation Type	MCL/MRDL	MCLs/MRDLS Violations	MCLs/MRDLS PWS in Violation	Significant M/R Violations	Significant M/R PWS in Violation
MCL, E. COLI, POS E COLI (RTCR)	Presence	5	5		
MONITORING (TCR), REPEAT MAJOR				8	8
MONITORING (TCR), ROUTINE MAJOR				70	26
MONITORING, ROUTINE, MAJOR (RTCR)				1,063	527

Violation Type	MCL/MRDL	MCLs/MRDLs Violations	MCLs/MRDLs PWS in Violation	Significant M/R Violations	Significant M/R PWS in Violation
MONITORING, ROUTINE, MINOR (RTCT)				104	64
<b>Subtotal</b>		5	5	1,245	593

**Table 7. Surface Water Treatment Rules**

Violation Type	Treatment Technique Violations	Treatment Techniques PWS in Violation	Significant M/R Violations	Significant M/R PWS in Violation
MONITORING, ROUTINE (IESWTR/LT1) MAJOR	0	0	37	19
SINGLE COMB FLTR EFFLUENT (IESWTR/LT1)	6	5	0	0
FAILURE TO PROVIDE LT2 TREATMENT	27	4	0	0
LOW CT GREATER THAN 4 HOURS	3	2	0	0
MONTHLY COMB FLTR EFFLUENT (IESWTR/LT1)	15	6	0	0
TX CFE TURBIDITY ABOVE 5.0 NTU	3	3	0	0
<b>Subtotal</b>	54	14	37	19

**Table 8. Disinfectants and Disinfection By-Products Rule (DBP1 & DBP2)**

Violation Type	MCL/MRDL (mg/l)	MCLs/MRDLs Violations	MCLs/MRDLs PWS in Violation	Significant M/R Violations	Significant M/R PWS in Violation
BROMATE	0.010	0	0	0	0
TOTAL ORGANIC CARBON	N/A			81	12
DISINFECTANT RESIDUAL	Free - 0.02 Chloramine - 0.5	0	0	682	373
CHLORINE DIOXIDE - ACUTE	0.8	3	2	1	1
CHLORINE DIOXIDE - NON-ACUTE	0.8	1	1	1	1
CHLORITE	1.0	0	0	19	7
TOTAL HALOACTETIC ACIDS	0.060	193	45	140	129
TOTAL TRIHALOMETHANES	0.080	554	131	139	128
<b>Subtotal</b>		747	141	1,063	474

**Table 9. Lead and Copper Rule**

Violation Type	Treatment Technique Violations	Treatment Techniques PWS in Violation	Significant M/R Violations	Significant M/R PWS in Violation
FOLLOW-UP OR ROUTINE TAP M/R (LCR)	0	0	510	484
INITIAL TAP SAMPLING (LCR)	0	0	15	15
INITIAL/FOLLOW-UP/ROUTINE SOWT M/R (LCR)	0	0	6	6
LEAD CONSUMER NOTICE (LCR)	0	0	611	525
WATER QUALITY PARAMETER	0	0	125	46
WQP LEVEL NON-COMPLIANCE (LCR)	0	0	0	0
LEAD SERVICE LINE REPLACEMENT (LCR)	0	0	0	0
PUBLIC EDUCATION (LCR)	22	20	0	0
ML LEVEL NON-COMPLIANCE	0	0	0	0
OCCT/SOWT RECOMMENDATION/STUDY	52	31	0	0
OCCT/SOWT INSTALL DEMONSTRATION (LCR)	0	0	0	0
<b>SUBTOTAL</b>	<b>74</b>	<b>48</b>	<b>1,267</b>	<b>1,006</b>

**Table 10. Groundwater Rule**

Violation Type	Significant M/R Violations	Significant M/R PWS in Violation
MONITOR GWR TRIGGERED/ADDITIONAL, MAJOR	94	82
MONITOR GWR TRIGGERED/ADDITIONAL MINOR	13	13
PUBLIC NOTICE RULE NOT LINKED VIOLATION	3	3
<b>Subtotal</b>	<b>110</b>	<b>96</b>

**Table 11. Consumer Confidence Reports**

Violation Type	Significant M/R Violations	Significant M/R PWS in Violation
CONSUMER CONFIDENCE RULE	20	20
<b>Subtotal</b>	<b>20</b>	<b>20</b>

**Table 12. Public Notification Rule**

Violation Type	Significant M/R Violations	Significant M/R PWS in Violation
PUBLIC NOTICE RULE	403	229
<b>Subtotal</b>	<b>403</b>	<b>229</b>

## Appendix A. Return to Compliance by Rule

Data included in Table 3 represent all violations starting prior to the end of 2016 and ending after the beginning of 2015. Violations that returned to compliance (RTC) in Table 3 are those violations starting prior to the end of 2016 and ending after the beginning of 2016 and returning to compliance in 2016.

**Table 13. Violations Returned to Compliance**

Rule	Violation Type Code	Violation Name	All Violations	RTC'd Violations
CCR	71	CCR REPORT	73	53
Chem	02	MCL, AVERAGE	486	9
Chem	01	MCL, SINGLE SAMPLE	181	7
Chem	03	MONITORING, ROUTINE, MAJOR	514	31
DBP	02	MCL, LRAA	1,065	318
DBP	27	MONITORING, ROUTINE (DBP), MAJOR	1,441	379
DBP	13	MRDL, ACUTE (CHL. DIOXIDE)	3	0
DBP	11	MRDL, NON-ACUTE (CHL. DIOXIDE)	1	0
GWR	34	MONITOR GWR TRIGGERED/ADDITIONAL, MAJOR	156	62
GWR	34	MONITOR GWR TRIGGERED/ADDITIONAL, MINOR	28	15
GWR	76	PUBLIC NOTICE RULE NOT LINKED VIOLATION	9	6
LCR	52	FOLLOW-UP OR ROUTINE	565	55
LCR	51	INITIAL TAP SAMPLING (LCR)	20	5
LCR	56	INITIAL/FOLLOW-UP/ROUTINE SOWT M/R (LCR)	59	53
LCR	66	LEAD CONSUMER NOTICE (LCR)	1,154	543
LCR	57	OCCT/SOWT RECOMMENDATION/STUDY (LCR)	79	27
LCR	65	PUBLIC EDUCATION (LCR)	57	35
LCR	53	WATER QUALITY PARAMETER M/R (LCR)	135	10
PN	75	PUBLIC NOTICE RULE LINKED TO VIOLATION	1,388	985
RAD	02	MCL, AVERAGE	313	7
RAD	03	MONITORING, ROUTINE MAJOR	54	15
SWTR	42	FAILURE TO PROVIDE LT2 TREATMENT	29	2

Rule	Violation Type Code	Violation Name	All Violations	RTC'd Violations
SWTR	CT	LOW CT GREATER THAN 4 HOURS	7	4
SWTR	38	MONITORING, ROUTINE (IESWTR/LT1), MAJOR	86	49
SWTR	44	MONTHLY COMB FLTR EFFLUENT (IESWTR/LT1)	28	13
SWTR	43	SINGLE COMB FLTR EFFLUENT (IESWTR/LT1)	16	10
SWTR	T2	TX CFE TURBIDITY ABOVE 5.0 NTU	9	6
TCR	21	MCL (TCR) ACUTE	3	3
TCR	22	MCL (TCR), MONTHLY	12	12
RTCR	1A	MCL, E.COLI, POS E COLI (RTCR)	9	4
TCR	25	MONITORING (TCR), REPEAT MAJOR	12	4
TCR	23	MONITORING (TCR), ROUTINE MAJOR	214	144
RTCR	3A	MONITORING, ROUTINE, MAJOR (RTCR)	1,063	0
RTCR	3A	MONITORING, ROUTINE, MINOR (RTCR)	104	0

## Obtaining a Copy of the 2016 Public Drinking Water Annual Compliance Report

As required by the Safe Drinking Water Act, the State of Texas has made the *2016 Public Drinking Water Annual Compliance Report* available to the public. Interested parties can obtain a copy of the *2016 Annual Public Water Systems Compliance Report* for Texas by accessing the TCEQ website at <http://www.tceq.texas.gov>

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