

# Nebraska Public Water Supply Program Summary Report 2016

**NEBRASKA**

The logo for the Nebraska Department of Health and Human Services features the word "NEBRASKA" in a bold, blue, sans-serif font. A yellow swoosh underline is positioned beneath the letters, starting under the 'N' and ending under the 'A'.

Good Life. Great Mission.

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**DEPT. OF HEALTH AND HUMAN SERVICES**

Nebraska Department of Health and Human Services  
Division of Public Health  
Office of Drinking Water and Environmental Health  
Public Water Supply Program

# Nebraska's Public Water System Program 2016 Annual Report

January 1 to December 31, 2016

Nebraska's twenty-first annual report  
as required by the 1996 Amendments to  
the federal Safe Drinking Water Act



June 30, 2017

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[http://dhhs.ne.gov/publichealth/Pages/enh\\_pwsindex.aspx](http://dhhs.ne.gov/publichealth/Pages/enh_pwsindex.aspx)

Available in alternate format

## To Obtain a Copy of the 2016 Public Water System Report

As required by the federal Safe Drinking Water Act, the State of Nebraska has made the 2016 Annual Public Water Systems report available to the public. Interested individuals can obtain a copy by accessing the Department website at:

[http://dhhs.ne.gov/publichealth/Pages/enh\\_pwsindex.aspx](http://dhhs.ne.gov/publichealth/Pages/enh_pwsindex.aspx)

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## Overview of the Federal Public Water Supervision Program

The United States Environmental Protection Agency (EPA) established the Public Water System Supervision (PWSS) Program under the authority of the 1974 Safe Drinking Water Act (SDWA). Under the SDWA and the 1986 Amendments, 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) and Maximum Residual Disinfectant Levels (MRDLs). For some regulations, EPA establishes treatment techniques in lieu of an MCL to control unacceptable levels of contaminants in water.

EPA also regulates how often public water systems (PWSs) monitor their water for contaminants and how often they report the monitoring results to the states or EPA. Generally, the larger the population served by a water system, the more frequent the monitoring and reporting requirements. In addition, EPA requires some PWSs to monitor for unregulated contaminants to provide data for future regulatory development. Finally, EPA requires PWSs to notify their consumers when they have violated these regulations. The 1996 Amendments to the SDWA require consumer notification to include a clear and understandable explanation of the nature of the violation, its potential adverse health effects, steps that the PWS is undertaking to correct the violation, and the possibility of using alternative water supplies during the violation.

The federal SDWA applies to the 50 states, the District of Columbia, Indian Lands, Puerto Rico, the Virgin Islands, American Samoa, Guam, and the Commonwealth of the Northern Mariana Islands.

The SDWA allows states and territories to seek EPA approval to administer their own PWSS program(s). The authority to run a PWSS program is called primacy. For a state to receive primacy, EPA must determine that the state meets certain requirements laid out in the SDWA and the federal regulations, including the adoption of drinking water regulations that are at least as stringent as the federal regulations and a demonstration that they can enforce the program requirements. Of the 56 states and territories, all but Wyoming and the District of Columbia have primacy. The EPA regional offices administer the PWSS programs within these two jurisdictions.

The 1986 SDWA Amendments gave Indian tribes the right to apply for and receive primacy. EPA currently administers PWSS programs on all Indian lands except the Navajo Nation, which was granted primacy in late 2000.

## Annual State Public Water System Report

Each quarter, primacy states submit data to the federal Safe Drinking Water Information System (SDWIS/FED), an automated database maintained by EPA. The data submitted include, but are not limited to, public water system (PWS) inventory information; the incidence of Maximum Contaminant Level, Maximum Residual Disinfectant Level, monitoring, and treatment technique violations and information on enforcement activity related to these violations. Section 1414(c)(3) of the federal Safe Drinking Water Act requires states to provide EPA with an annual report of violations of the primary drinking water standards. This report provides the numbers of violations in each of six categories: MCLs, MRDLs, treatment techniques, variances and exemptions, significant monitoring violations, and significant consumer notification violations. The EPA regional offices report the information for Wyoming, the District of Columbia, and all Indian Lands except the Navajo Nation. EPA regional offices also report federal enforcement actions taken. Data retrieved from SDWIS/FED form the basis of this report.

The following report is a summary of the compliance of Nebraska's public water systems with the Safe Drinking Water Act during 2016, as required by the 1996 Amendments to the federal Safe Drinking Water Act. Other significant program activities that the program staff perform in assuring water is safe for human consumption are also included in this report.

The mission of the Public Water System Program of the Division of Public Health of the Nebraska Department of Health and Human Services (Department) is to protect the health and welfare of Nebraskans by assuring safe, adequate, and reliable drinking water.

People expect their drinking water will be safe when they turn on the faucet. Program staff work in many areas to assure safe drinking water.

More information about systems with violations that occurred in 2016 is available from the Division of Public Health of the Nebraska Department of Health and Human Services, 301 Centennial Mall South, P.O. Box 95026, Lincoln, NE 68509, phone 402-471-2541 or at EPA's website:

[http://www.epa.gov/enviro/html/sdwis/sdwis\\_ov.html](http://www.epa.gov/enviro/html/sdwis/sdwis_ov.html)

This report is also available on the Department's website at:

[http://dhhs.ne.gov/publichealth/Pages/enh\\_pwsindex.aspx](http://dhhs.ne.gov/publichealth/Pages/enh_pwsindex.aspx)

Notices of the report's availability will be provided to public libraries and local health departments.

## Terms Used In This Report

### *Consumer Notification*

Every community water system is required to deliver to its customers a brief annual water quality report. 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.

### *Maximum Contaminant Level (MCL)*

Under the federal Safe Drinking Water Act, 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 Disinfectant Level (MRDL)*

EPA sets national limits on residual disinfectant levels in drinking water to reduce the risk of exposure to disinfectant byproducts formed when the public water systems add chemical disinfectant(s) for either primary or residual treatment. These limits are known as Maximum Residual Disinfectant Levels (MRDLs).

### *Monitoring*

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

### *Public Notice Violations*

The Public Notification Rule requires all public water systems to notify their consumers any time a system violates a national primary drinking water regulation or has a situation posing risk to the public.

### *Public Water System (PWS)*

A Public Water System is a system that provides water via piping or other constructed conveyances for human consumption to at least 15 service connections or serves an average of at least 25 people for at least 60 days each year. For this report when the acronym "PWS" is used, it means systems of all types unless specified in greater detail.

There are three types of public water systems:

1. Community water systems (CWS) (a) serve at least 15 service connections used by year-round residents of the area served by the system or (b) regularly serve at least 25 year-round residents. They include such entities as mobile home parks, rural water districts, and sanitary improvement districts, as well as municipalities.
2. Non-transient, non-community water systems (NTNC) are not community water systems. They regularly serve at least 25 of the same individuals over six

months of the year. Examples include a manufacturing company with its own well and a rural school with over 25 students.

3. Transient non-community water systems (TNC) are non-community systems that do not regularly serve at least 25 of the same persons over six months per year. Examples of transient non-community systems are a café beside the highway which has its own well and the water systems at interstate rest areas and state parks.

### *Significant Monitoring Violations*

For this report, significant monitoring violations are generally defined as any significant monitoring violation that has 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.

### *Significant Consumer Notification Violations*

For this report, a significant public notification violation occurred if a community water system completely failed to provide its customers with the required annual water quality report.

### *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, some bacteria, and turbidity.

### *Variances and Exemptions*

A primacy state can grant a PWS a variance from a primary drinking water regulation if the characteristics of the raw water sources reasonably available to the PWS do not allow the system to meet the MCL. To obtain a variance, the system must agree to install the best available technology, treatment technique(s), or other means of limiting drinking water contamination that EPA finds are available (taking costs into account), and the Department must find that the variance will not result in an unreasonable risk to public health. The variance will be reviewed not less than every 5 years to determine if the system remains eligible for the variance.

The Department can grant an exemption temporarily relieving a PWS of its obligation to comply with an MCL, treatment technique, or both if the system's noncompliance results from compelling factors (which may include economic factors) and the system was in operation on the effective date of the MCL or treatment technique requirement. A new PWS that was not in operation on the effective date of the MCL or treatment technique requirement by that date may be granted an exemption only if no reasonable alternative source of drinking water is available to the new system. Neither an old nor a new PWS is eligible for an exemption if management or restructuring changes can reasonably be made that will result in compliance with the SDWA or improvement of water quality, or if the exemption will result in an unreasonable risk to public health. The state will require the PWS to comply with the MCL or treatment technique as

expeditiously as practicable, but not later than three years after the otherwise applicable compliance date.

In short, a variance or an exemption may be issued, but unreasonable risk to public health is not allowed. For all the details regarding exemptions and variances, see Title 179 NAC 6, Variances and Exemptions [http://dhhs.ne.gov/Pages/reg\\_t179.aspx](http://dhhs.ne.gov/Pages/reg_t179.aspx)

## Nebraska's Public Water Systems

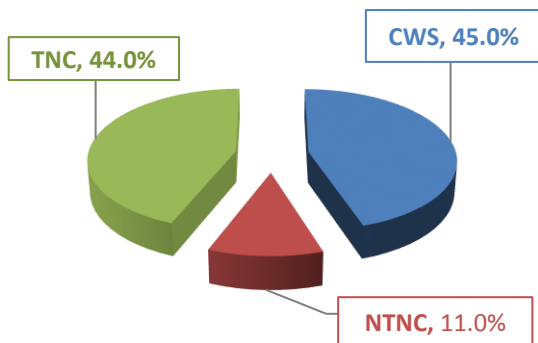
### Population and Type of System

Nebraska public water systems can be broken down into categories based on the size of the population served and/or the type of population served.

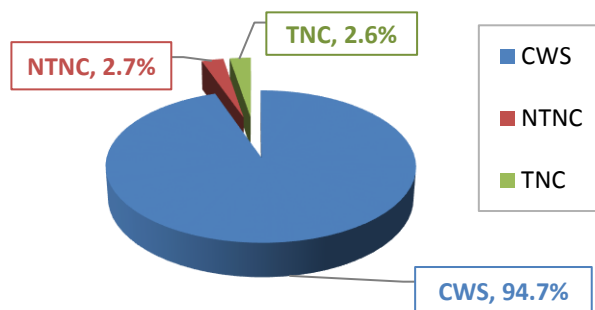
Population	CWS	NTNC	TNC	Total Systems	Percentage*
<100	100	80	504	684	51.1%
101-500	275	46	88	409	30.6%
501-1000	101	7	1	109	7.9%
1001-3300	84	8	0	92	7.1%
3301-10,000	28	2	0	30	2.2%
10,001-50,000	12	0	0	12	0.9%
>50,000	2	0	0	2	0.1%
TOTAL	602	143	593	1338	100%

CWS = Community ..... 602 systems  
 NTNC – Non-transient, non-community ..... 143 systems  
 TNC = Transient, non-community ..... 593 systems

**Public Water System Types**



**Populations Served by Public Water Systems**





As you can see, 45% of all public water systems are community water systems that serve 95% of the population. 44% of the systems are transient, non-community systems, but they serve only 2.6% of the population. And 11% of the systems are non-transient, non-community water systems that serve 2.7% of the population. It's interesting to note that Nebraska is predominantly a small system state with 96.7% of all of Nebraska's public water systems serving 3,300 or fewer persons.

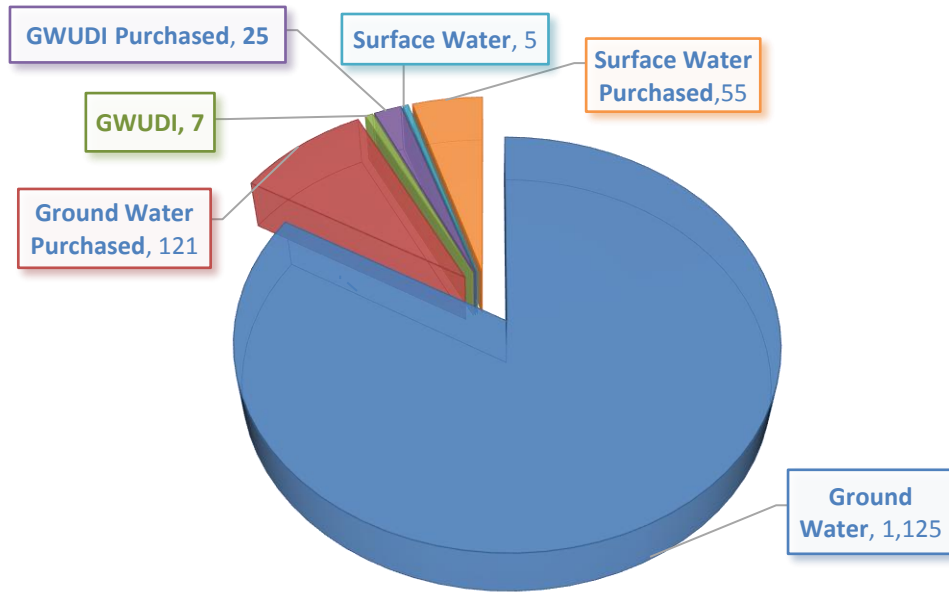
## Public Water In Nebraska

The Division of Public Health of the Department of Health and Human Services, through its Public Water System Program, administers the state's regulations governing public water systems (Title 179 NAC 2 through 26), promulgated under the state's SDWA pursuant to and in accordance with the federal SDWA. EPA promulgates rules and sets standards in accordance with the federal SDWA, which was originally passed in 1974 and later amended in 1986 and 1996.

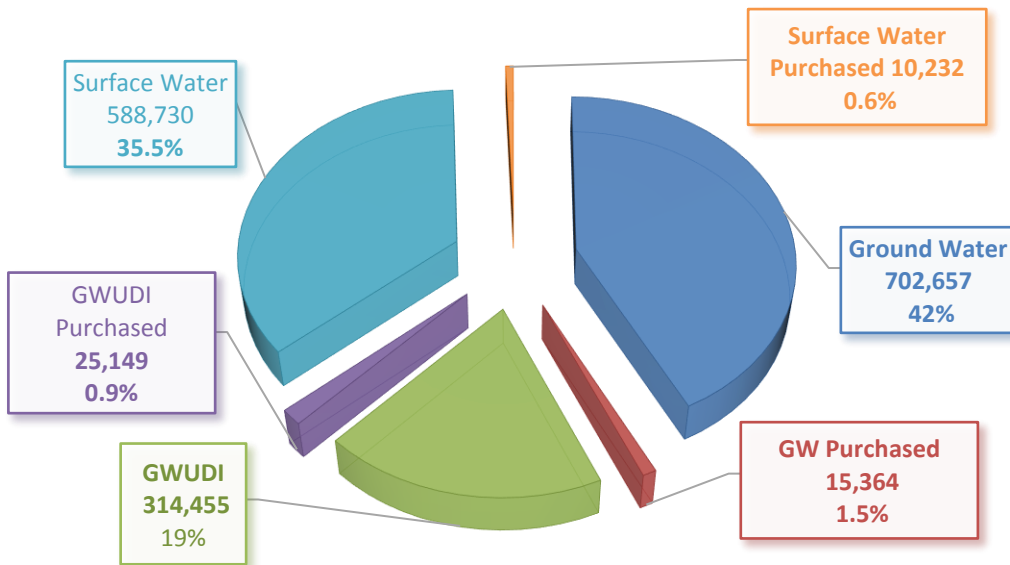
These rules are generated by EPA in accordance with the federal SDWA and its amendments. The SDWA includes water quality standards, and requirements for sampling, treatment and public notification. The Act affects approximately 1,338 public water systems in Nebraska. (The number of public water systems varies as new ones open and existing ones close.) Public water systems provide water to approximately 80% of the people of Nebraska. Private domestic wells provide water for other Nebraskans.

Most of the water Nebraskans drink is ground water. Only 5 public water systems in the state obtain their drinking water from surface water. Another 55 systems purchase water from those five systems. In addition, 7 systems utilize ground water under the influence of surface water (GWUDI), and 25 additional systems purchase water from those seven systems. The remaining 1,125 systems use ground water, and an additional 121 systems purchase their water from another ground water system.

**NUMBER OF SYSTEMS BY SOURCE  
WATER TYPE**



**PUBLIC WATER SYSTEM POPULATION SERVED BY  
SOURCE WATER TYPE**



The 1996 Amendments to the Safe Drinking Water Act require each state to publish a report each year that includes the violations that occurred in the state. Specific information about the systems that had violations is available from the Division of Public Health of the Nebraska Department of Health and Human Services, 301 Centennial Mall South, P.O. Box 95026, Lincoln, NE 68509, phone 402-471-2541.

## What Nebraska's Public Water System Program Does



The Public Water System Program has 33 full time equivalent positions (FTEs). The Monitoring and Compliance Section has 11, the Engineering Section has 8, the Field Services and Training Section has 12, and portions of two other FTEs contribute to the administration of the program.

### Field Services and Training Section

The Public Water System Field Services and Training (FS&T) Section encompasses four separate but related areas of responsibility: 1) field services (inspections, operator assistance, etc.), 2) training, 3) capacity development, and 4) water system security. FS&T staff include a supervisor, eight field representatives, a training coordinator, a capacity development coordinator, and a staff assistant. FS&T staff conduct sanitary surveys, train public water system operators, attend and present information at continuing education programs for water operators, assist public water systems (PWSs) during emergency situations and help public water systems to achieve or maintain adequate technical, financial, and managerial capacity. There are eight field areas with locations in North Platte, Grand Island, Norfolk, Blair, Nelson, Chadron and Lincoln to provide close contact and timely assistance to Nebraska's public water systems. The Norfolk office serves two field areas.

Routine sanitary surveys are conducted once every three years for community water systems (CWS) and non-transient non-community (NTNC) public water systems and once every five years for transient non-community (TNC) PWSs. A sanitary survey is an on-site review of the water source, facilities, equipment, operation and maintenance of a public water system for the purpose of evaluating the system's adequacy and ability to reliably produce and distribute safe drinking water within the confines of regulatory requirements. A few of the items for which field personnel check are the presence of a properly licensed water operator in responsible charge, an emergency plan, and a cross-connection control program.

In 2016, field personnel conducted 435 sanitary surveys (205 community, 49 non-transient non-community, and 181 transient public water systems) and 59 follow-up surveys (38 community, 0 non-transient non-community, and 21 transient public water systems). When deficiencies are found, the system is notified of the needed improvements. A total of 969 deficiencies were found in 2016 (4 less deficiencies than the previous year, with 60 more sanitary surveys having been done). This reflects an overall deficiency rate of 2.2 deficiencies per sanitary survey in 2016. There was an average of 3.3 deficiencies found in community systems, an average of 2.2 deficiencies found in non-transient non-community water systems, and an average of 1.3 deficiencies in transient water systems. Based on the overall deficiency rate, there was a 15.4% decrease in deficiency numbers from 2015 to 2016.

No deficiencies were found in 162 (30.3%) sanitary surveys done in 2016 (64 CWS, 21 NTNC and 77 TNC). If we adjust for these surveys where there were no deficiencies, the systems that had deficiencies averaged 3.5 per survey.

Nebraska's public water systems continue to be relatively stable regarding the average number of deficiencies found during sanitary surveys.

Field personnel conduct site inspections for the location of new wells, in addition to assisting engineering services personnel in conducting construction inspections of public water system projects (such as the drilling of wells, the construction of treatment plants, and the erection of water towers) during construction and upon completion. When needed, field services staff provide public health advice concerning emergency situations associated with natural disasters or contamination of a public water system. As needed or upon request, they go out to communities to help public water system personnel identify potential causes of problems in their systems.

The Revised Total Coliform Rule (RTCR), went into effect on April 1, 2016. When public water systems have a confirmed presence of coliform bacteria, the RTCR requires that either a Level 1 or Level 2 assessment of the system be conducted. An assessment is an evaluation to identify the possible presence of sanitary defects, defects in coliform monitoring practices, and (when possible) the likely reason for the presence of coliform bacteria in the system. Any identified defects are required to be corrected.

A Level 1 assessment is triggered by the confirmed presence of only total coliform in the public water system. The public water system is responsible for completing the Level 1 assessment, and submitting its findings to the Department for review. Field Staff are responsible for completing the review of Level 1 assessments. Between April 1 and December 31, 2016, 172 Level 1 Assessments were triggered.

Level 2 assessments are triggered by either multiple Level 1 triggers within a running twelve-month period, or by the confirmed presence of *E. coli* in the system. The Level 2 assessment provides a much more detailed evaluation of the public water system. Similar in many aspects to a sanitary survey, Level 2 assessments are conducted by Field Staff. Between April 1 and December 31, 2016, 60 Level 2 Assessments were triggered.

The Public Water System Program, in-house as well as through technical assistance providers, maintains a number of hypochlorinators for loan to public water systems when bacterial contamination is a source of concern. This assistance to communities in need of temporary chlorination of their water supplies has been very helpful in ensuring the safety of drinking water. When a power outage or source failure is involved, program staff also help systems locate equipment and supplies which may be needed. In general, the program's response to emergencies is limited to consultation and advice regarding actions to be carried out by the owners of public water systems.

In addition to the tasks mentioned above, the FS&T program has been actively enforcing water operator licensing standards through the issuance of fines against operators who are in responsible charge of their respective public water systems who allow their licenses to expire. Without a valid license, they are not allowed by regulation to be in responsible charge of or operate a public water system, and the Department has the ability to issue administrative penalties (fines) against such persons when they continue to be in responsible charge or

operate without a valid water operator license. During 2016 no fines were issued to individuals for "Practice (Operating) Without a License."



In 2016, FS&T program personnel conducted 10 water operator training courses, Grades I through IV, with a total of 158 attendees. An additional 11 persons completed the correspondence course that is also offered to prepare for the Grade IV licensure examination. For Grade VI licensure (backflow preventer testing and repair), 10 courses were offered with a total of 71 attendees. For Grade V operators (transient systems only), there are no classroom courses. Training is obtained through a self-study process. Water operators are licensed only after successfully passing an exam. Examinations are offered following each training course and can also be scheduled individually.

The following table breaks down the number of licenses issued or reinstated following examination at each grade level during 2016:

Grade	Examinations	Passing	Number of Licenses Issued
I	2	1	1
II	8	4	3
III	25	22	20
IV	156	133	124
V	68	62	62
VI	95	82	80

The Drinking Water Program and other training providers offered continuing education opportunities for water operators in 2016. Coordinated by the program, a group informally known as the Water Operator Training Coalition convened periodically in 2016 to identify training needs and to avoid conflicts in the scheduling of training opportunities. Members include the Nebraska Rural Water Association, the League of Nebraska Municipalities, the Midwest Assistance Program, Central Community College, and the Nebraska Section of the American Water Works Association. In 2016, as in past years, the Coalition produced a calendar identifying dates and locations of continuing education opportunities for distribution to licensed water operators.

A total of 152 workshops/seminars/conferences were offered in Nebraska in 2016 for the purpose of water operator continuing education. Of these, 44 focused primarily on backflow prevention continuing education for Grade VI operators.

The Capacity Development Coordinator has been overseeing the Department's 2% contracts with the various technical assistance providers – the 2% Team -- which consist of the same members as the Water Operator Training Coalition. The name comes from the 2% set-aside from the Drinking Water State Revolving Fund.

To provide a measurement for financial and managerial capacity for a project that has been funded by the State Revolving Fund Program, assessments are made on water systems prior to beginning any new construction. These initial assessments provide a basis whereby a determination can be made as to the financial and managerial capacity of the system, before work begins on the new project. Once the project has been completed and the system has been in operation for approximately one year, a follow-up assessment is done to show the improvement that has been accomplished with the funding that was provided. In 2016 there were 19 assessments completed.

A concerted effort has been made to educate water system operators regarding their role in developing and maintaining adequate capacity for their water systems. There were 26 sessions for operators, which included one conference presentation with the Nebraska Section of the American Water Works Association and two conference presentations with the Nebraska Rural Water Association. Capacity development is the process through which water systems acquire and maintain adequate technical, managerial, and financial capabilities to enable them to consistently provide safe drinking water.

These training sessions involved 461 attendees representing 267 systems.

Nine board/council information sessions were held to advise members about the legal and fiduciary responsibilities that they have to assure adequate, safe water to their customers. A total of 75 board/council members attended, representing nine community water systems.

The 2% Team provides continuing education for water operators, and also assists the Department by providing technical, managerial and financial assistance to public water systems. This includes assistance with the applications for funding from various sources, training manuals, and mentors from large systems to assist small systems, as well as several other activities. The Department has found capacity development to be a proactive approach to helping systems.

The Department conducts emergency response training sessions around the state. This training focuses on the necessity of keeping a good working emergency response plan up-to-date and training all individuals who have a role in the plan.

The Department received 25 emergency calls in 2016. The circumstances prompting these calls included positive coliform samples and pressure losses due to main breaks. Other emergency calls not related to public water include swimming pool accidents, fuel spills, fertilizer spills, wastewater releases, etc.



### **Engineering Services Section**

The Engineering Services Section provides engineering plan review; issuance of construction permits; inspection of newly constructed projects for issuance of approval for placement into service; and technical assistance and advisory contacts with owners/operators of public water

systems, consulting engineers, state, federal and local officials, organizations, and the general public in matters relating to siting, design, construction, maintenance, and operation of public water systems.

Water system plan review was incorporated into state law to increase assurance that water source development, treatment, storage, and distribution facilities would be constructed or expanded in a manner contributing to the ability of the system to deliver safe drinking water. Emphasis is placed on encouraging long-term benefits from capital investment as opposed to temporary actions designed to eliminate an emergency situation. These engineering services are a significant factor in preventing the occurrence of contamination in the delivery of safe drinking water.

The Nebraska Safe Drinking Water Act and regulations adopted thereunder require that plans and specifications for all major construction related to public water systems be prepared by a registered professional engineer and be approved by the Department before construction begins. The law defines major construction as structural changes that affect the source of supply, treatment processes, or transmission of water to service areas, but it does not include the extension of service mains within an established service area. In 2016, the Department received 191 sets of plans and specifications for the construction of water projects for review and approval. In addition, engineering staff conducted 181 inspections of constructed water projects.

The program's engineering personnel provide technical assistance to owners/operators of public water systems in complying with the federal and state laws and regulations. They also assist state and federal agencies in eliminating environmental health hazards. Some of the additional major activities that staff members are currently participating in are the common pre-application review process for federal and state agencies' loan and grant programs for water and wastewater projects and Drinking Water State Revolving Fund (DWSRF) program activities. The DWSRF program is administered jointly by the Department and the Nebraska Department of Environmental Quality (NDEQ).

On April 4, 2010, state regulations – Title 179 NAC 7, *Siting, Design and Construction of Public Water Systems* -- became effective. As a result, public water systems can enter into a 3-year agreement to do water distribution main projects without having to submit plans and specifications to the Department for review and approval. These systems are subject to an annual audit by the Engineering Services Section as a condition of the agreement. In 2016, 20 annual audits were completed, one public water system entered into such an agreement with the Department and one public water system opted out of the agreement. As of December 31, 2016, a total of 22 public water systems had entered into a 3-year agreement with the Department.

At the beginning of the 2016 calendar year, the Engineering Services Section reviewed the responses from the annual DWSRF needs survey sent out to all public water systems the preceding fall. The returned surveys indicated 344 eligible projects with approximately \$706 million in infrastructure needs. The ranking system developed by the Department was used to prioritize and establish the funding order for DWSRF projects. In addition to public health, the prioritization was also based on readiness-to-proceed criteria. As a primary result, the DWSRF closed 19 loans in 2016 that totaled \$19.7 million, with just under \$1.9 million of that in forgiveness assistance. High priority status projects, which are those that address water quality issues, accounted for 4 of those loans that were closed.

In the fall of 2016, the Engineering Services staff started drafting the next Intended Use Plan (IUP). A revised public water system needs survey form was mailed to all public water supply systems. A total of 361 projects with infrastructure needs of just over \$1 billion were identified for inclusion in the draft SFY 2018 IUP.

The Engineering Services staff also review and evaluate justifications provided by professional engineers for any new well site that does not meet the setback distances in Title 179 NAC 7. In 2016, a total of nine new well site justifications were reviewed and approved. In addition, the engineering staff also works with NDEQ and City officials in evaluating encroachment issues that may be of concern to existing public drinking water wells. Four encroachment issues on existing wells were evaluated.

In summary, the Engineering Services Section activities play a significant role in ensuring that public water systems in Nebraska provide safe drinking water to the public.

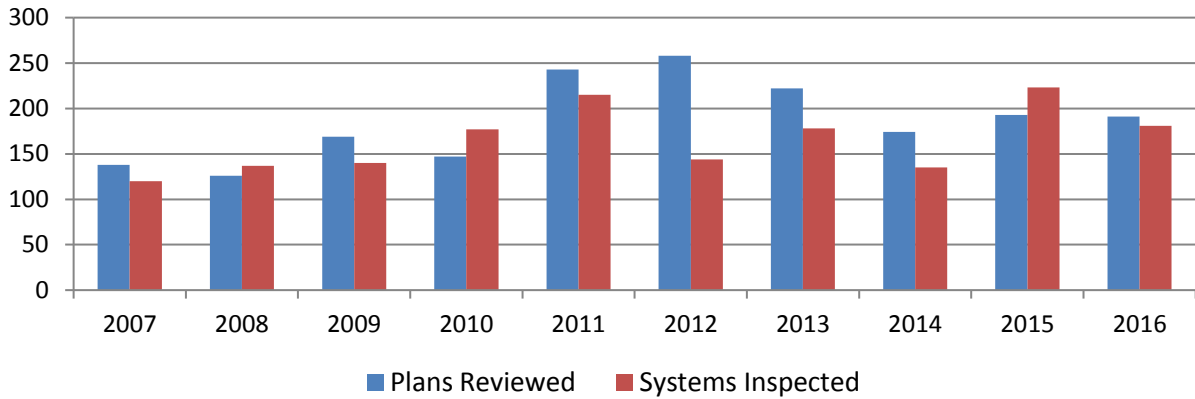
***SUMMARY REPORT FOR ENGINEERING SERVICES REVIEW AND  
INSPECTION ACTIVITIES***

January 1, 2016 to December 31, 2016

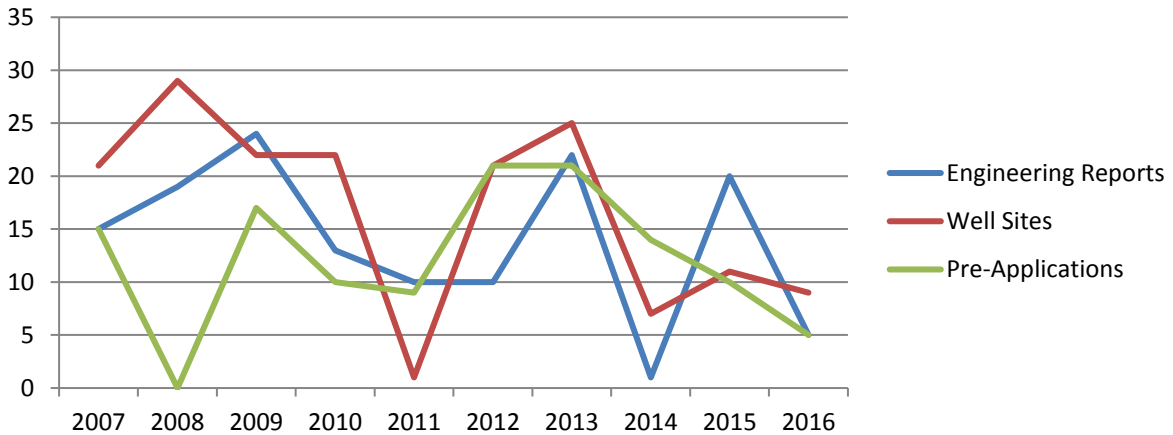
<b>ACTIVITIES</b>	<b>NUMBER</b>
Water Projects Received for Review and Approval	191
Water Projects Inspected	181
Major Engineering Reports for Water System Improvements Evaluated	5
Special Reports/Pilot Studies reviewed	3
New Water Well Sites Evaluated	9
Common Pre-Applications for Water/Wastewater Projects for Federal and State Financial Assistance Reviewed	5
Operation and Maintenance Manuals for Drinking Water State Revolving Loan Funded Projects Reviewed	7
Three-Year Agreements for Distribution Main Projects—Annual Audits Completed	20
Encroachment Issues	4



**Engineering Plans Reviewed/  
Water Projects Inspected**



**Engineering Evaluations**



**Monitoring and Compliance Section**

The Monitoring and Compliance (M&C) Section of the Public Water System Program reviews the analytical results of public water systems' monitoring for contaminants in their drinking water. In this review of analytical results, M&C personnel determine compliance with Maximum Contaminant Levels and issue appropriate enforcement actions when necessary. They determine PWS sample schedules and arrange for the appropriate sampling kits to be sent from the Division of Public Health's Environmental Laboratory.

### ***Safe Drinking Water Information System***

The Safe Drinking Water Information System (SDWIS) is available to all field personnel in their offices and in the field, as well as to those who work in the drinking water program in the Lincoln office. This system was developed by EPA for states to report water quality data. It provides information on all public water system facilities, test results, violations, compliance assistance, enforcement, compliance schedules, water operator licensure, and PWS operating permits. SDWIS is used in over 40 states. It receives electronic sample data from the Department Laboratory and all laboratories that perform analyses for the Department.

### ***Monitoring and MCL Violations, and Assessments***

There were no waterborne diseases or deaths reported due to Nebraska public water systems in 2016.

A public water system is required to monitor and verify the presence or absence of contaminants. If a contaminant is present in the water, the system must monitor and verify that it does not exceed the maximum contaminant level (MCL). An MCL is the amount of a substance that is allowed to be in the water before the system must take corrective action to lower the level. Levels of substances below the MCL are not considered to be harmful to health. In 2016, only 6 of 87 contaminants for which community public water systems monitor were found in quantities above the MCL. That means 81 contaminants for which monitoring was conducted were not found above the MCL in *any* community water system in Nebraska.

A major monitoring violation occurs when no valid samples are obtained. Significant monitoring violations are defined as any major monitoring violation that has occurred during a specified reporting period, which differs for each contaminant.

The following tables summarize the types of violations issued in calendar year 2016 and the number of public water systems that received violations. There were a total of 530 violations from 326 public water systems for MCLs and monitoring. There were no treatment technique violations and there were no public notice violations in Nebraska in 2016.

### ***Total Coliform Rule (TCR)***

Several types of coliform bacteria are found in the environment and in the intestinal tract of humans and warm blooded animals. Coliform bacteria do not necessarily produce disease, but when they are present, other pathogens may also be present. Because of that association, EPA has used total coliform bacteria as an indicator organism for potential contamination. Testing for total coliform is inexpensive and results can be obtained in 24 hours.

Prior to April 1, 2016, the Department operated under the Total Coliform Rule (TCR). Total coliform violations occurred when the Maximum Contaminant Level has been exceeded. A Non-acute violation occurred when only total coliform was involved. Public water supply systems had to notify the public through a Public Notice about the potential adverse health effects and take corrective action. An acute violation occurred when one or more samples indicate total coliform and *E. coli*, a fecal coliform bacteria. The water system had to notify the

public and issue a boil water advisory until the system had completed additional testing and found that the system again met the safe drinking water standards.

Under the TCR, if a community water system was issued four total coliform violations in a running twelve-month period, or a non-community water system was issued three violations in a running twelve-month period, the system was issued an Administrative Order requiring a minimum of six months disinfection.

**TCR Violations**

(All public water systems must monitor for total coliform bacteria.)

Violation	Number of Violations	Number of Systems	% of Systems with Violations
Acute MCL ( <i>E. coli</i> )	1	1	0.0747%
Non-Acute MCL (Total Coliform)	26	23	1.7190%
Major Monitoring	18	16	1.1958%

**Revised Total Coliform Rule (RTCR)**

Starting on April 1, 2016, the Revised Total Coliform Rule (RTCR) went into effect. The objective of the RTCR is to increase public health protection through the reduction of potential pathways of entry for fecal contamination into distribution systems. The new rule is based on a “find and fix” approach and has established a MCL for *E. coli*. As with the prior Total Coliform Rule, all public water systems are required to monitor for the presence of coliform bacteria and routine monitoring is based on the system type and size. RTCR assessments and corrective actions are required based on these monitoring results. A system is required to do Public Notice (PN) for failure to complete an assessment or corrective action, and for an Acute *E. coli* violation.

With this “find and fix” approach, Level 1 and Level 2 Assessments of the public water system are conducted in accordance with the RTCR. The assessments are meant to evaluate a system and try to find the reasons for the Total Coliform or *E. coli* detects.

A Level 1 Assessment is triggered when total coliform is found in the system. The public water system is responsible for conducting the Level 1 Assessment and for returning the completed Level 1 paperwork to their Field Area Representative who reviews and accepts it or returns it for further information. Identified defects noted in the Assessment are required to be corrected in a timely manner.

A Level 2 Assessment is triggered when a system incurs multiple Level 1 Assessments in a running 12-month period, or if a system has a confirmed *E. coli* presence within their system. The Level 2 Assessment is a more detailed analysis of the public water system, with many similarities to a sanitary survey. Department Field Area Staff conduct Level 2 Assessments with a representative of the public water system. Level 2 paperwork is completed and identified defects are noted. The system is sent a letter and copy of the paperwork, and is responsible for

responding to the letter in a timely manner with a timeline of when the defects found will be corrected.

**RTCR Assessments & Violations**

(All public water systems must monitor for total coliform bacteria.)

Type of RTCR Assessment	Number of Assessments Triggered	Number of Systems	% of Systems with Assessments
Level 1, Multiple TC +	177	177	13.228%
Level 2, 2 <sup>nd</sup> Level 1 triggered	53	47	3.5127%
Level 2, <i>E. coli</i> MCL triggered	18	17	1.2705%

Type of RTCR Violation	Number of Violations Issued	Number of Systems	% of Systems with Violations
Treatment Technique, Level 1 requirements not met	3	3	0.2242%
Treatment Technique, Level 2 requirements not met	3	3	0.2242%
MCL – <i>E. coli</i> +	18	17	1.2705%
Monitoring, Additional Routine, Major Routine	83	71	5.3064%

**Nitrate-Nitrite Violations**

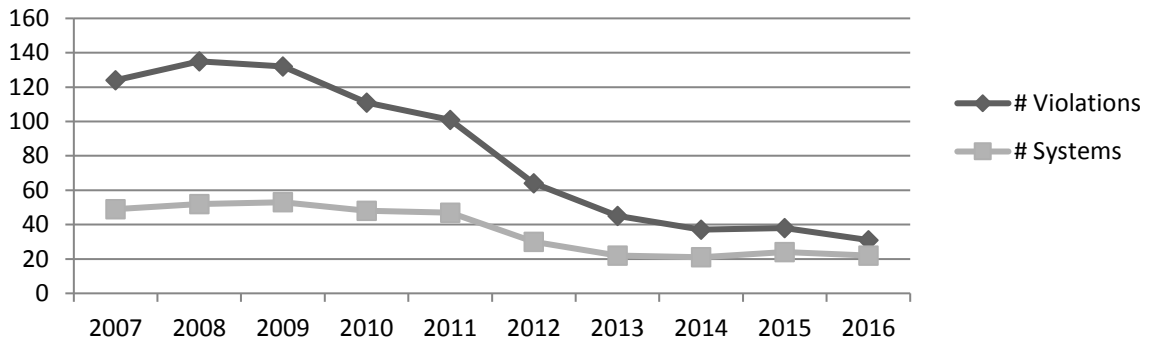
This listing is separate from other Inorganic Contaminants because only Community and Non-transient, non-community systems monitor for other inorganic contaminants, while ALL public water systems monitor for Nitrate-Nitrite.

The number of nitrate-nitrite MCL violations increased by one and the number of monitoring violations decreased from the previous year.

Violation	Number of Violations	Number of Systems	% of Systems With Violations
MCL – 10 mg/l	31	22	1.6%
Monitoring	2	2	0.15%

Nitrate-nitrite violations are considered acute violations. Immediate adverse health effects can be experienced when nitrate is consumed by the vulnerable population of pregnant women, infants under six months of age, and nursing mothers. A system is issued an Administrative Order to correct a nitrate contamination problem if two nitrate-nitrite violations are issued in a nine-month period. The system is significantly not in compliance when it receives one violation.

## Acute Nitrate MCL Violations



Looking at the past 10 years, the number of nitrate MCL violations has decreased significantly in the past seven years.

### Public Notification

Rule	Number of Violations	Number of Systems
Consumer Confidence Rule	0	0

**Volatile Organic Chemical Violations**

(Only Community and Non-transient, non-community systems monitor for VOCs.)

<b>Contaminant</b>	<b>Number of MCL Violations</b>	<b>Number of Monitoring Violations</b>	<b>Number of Systems</b>	<b>Systems With Violations</b>
1,1-Dichloroethylene	0	0	0	0.0%
1,1,1-Trichloroethane	0	0	0	0.0%
1,1,2-Trichloroethane	0	0	0	0.0%
1,2-Dichloroethane	0	0	0	0.0%
1,2-Dichloropropane	0	0	0	0.0%
1,2,4-Trichlorobenzene	0	0	0	0.0%
Benzene	0	0	0	0.0%
Carbon tetrachloride	0	0	0	0.0%
cis-1,2-Dichloroethylene	0	0	0	0.0%
Dichloromethane	0	0	0	0.0%
Monochlorobenzene	0	0	0	0.0%
o-Dichlorobenzene	0	0	0	0.0%
para-Dichlorobenzene	0	0	0	0.0%
Styrene	0	0	0	0.0%
Tetrachloro-ethylene	0	0	0	0.0%
Toluene	0	0	0	0.0%
trans-1,2-Dichloroethylene	0	0	0	0.0%
Trichloroethylene	0	0	0	0.0%
Vinyl chloride	0	0	0	0.0%
Xylenes (total)	0	0	0	0.0%

***Inorganic Chemical Contaminant Violations***

(Only Community and Non-transient, non-community systems monitor for Inorganic Chemicals.)

<b>Contaminant</b>	<b>Number of MCL Violations</b>	<b>Number of Monitoring Violations</b>	<b>Number of Systems</b>	<b>Systems with MCL Violations</b>
Antimony	0	1	1	0.1%
Asbestos	0	0	0	0%
Arsenic	23	3	11	0.8%
Barium	0	1	1	0.1%
Beryllium	0	1	1	0.1%
Cadmium	0	1	1	0.1%
Chromium total	0	1	1	0.1%
Cyanide (as free cyanide)	0	1	1	0.1%
Fluoride	0	1	1	0.1%
Mercury	0	1	1	0.1%
Nickel	0	1	1	0.1%
Selenium	5	1	3	0.2%
Sodium	0	0	0	0%
Thallium	0	1	1	0.1%

***Non-Volatile Synthetic Organic Chemical Contaminants***

(Only Community and Non-transient, non-community systems monitor for Non-Volatile Synthetic Organic Chemicals.)

<b>Contaminant</b>	<b>Number of MCL Violations</b>	<b>Number of Monitoring Violations</b>	<b>Number of Systems</b>	<b>Systems with Violations</b>
2,3,7,8-TCDD (Dioxin)	0	0	0	0%
2,4-D	0	0	0	0%
2,4,5-TP	0	0	0	0%
Alachlor	0	0	0	0%
Atrazine	0	0	0	0%
Benzo[a]pyrene	0	0	0	0%
Carbofuran	0	0	0	0%
Chlordane	0	0	0	0%
Dalapon	0	0	0	0%

**Non-Volatile Synthetic Organic Chemical Contaminants – Continued**

Contaminant	Number of MCL Violations	Number of Monitoring Violations	Number of Systems	Systems with Violations
Di(2-ethylhexyl)adipate	0	0	0	0%
Di(2-ethylhexyl)phthalate	0	0	0	0%
Dibromochloropropane	0	0	0	0%
Dinoseb	0	0	0	0%
Diquat	0	0	0	0%
Endothall	0	0	0	0%
Endrin	0	0	0	0%
Ethylene dibromide	0	0	0	0%
Glyphosate	0	0	0	0%
Heptachlor	0	0	0	0%
Heptachlor epoxide	0	0	0	0%
Hexachlorobenzene	0	0	0	0%
Hexachlorocyclopentadiene	0	0	0	0%
Lindane	0	0	0	0%
Methoxychlor	0	0	0	0%
Oxamyl (Vydate)	0	0	0	0%
Pentachlorophenol	0	0	0	0%
Picloram	0	0	0	0%
Polychlorinated biphenyls	0	0	0	0%
Simazine	0	0	0	0%
Toxaphene	0	0	0	0%

**Radionuclides**

(Only Community water systems monitor for Radionuclides.)

Contaminant	Number of MCL Violations	Number of Monitoring Violations	Number of Systems	Systems with Violations
Gross Alpha Including Radon and Uranium	0	0	0	0.0%
Uranium Mass	4	0	1	0.2%
Combined Radium (Radium -226 and Radium -228)	0	0	0	0.0%



**Disinfection Byproducts**

(Only water systems that disinfect their water, monitor for Disinfection Byproducts and Disinfectant Residuals.)

Contaminant	Number of MCL Violations	Number of Monitoring Violations	Number of Systems
Total Trihalomethanes	7	0	3
Total Haloacetic Acids	0	0	0

**Disinfection Byproducts Stage 1 Monitoring**

Violation	# Violations	# Systems
Qualified Operator Failure	2	2

**Disinfection Byproducts Monitoring Plan**

	# Violations	# Systems
Failure to have a plan	0	0

**Disinfectant Residual**

MRDL	Treatment Technique # Violations	Treatment Technique # Systems	Monitoring # Violations	Monitoring # Systems
0	0	0	5	5

**Lead and Copper Rules**

(Only Community and Non-transient, non-community water systems monitor for Lead and Copper.)

Contaminant	Number of Monitoring Violations	Number of Systems	Systems with Violations
Lead and Copper	0	0	0.0%

**Surface Water Treatment Rules**

Type of Violation	Number of Violations	Number of Systems
Treatment Technique	0	0
Monitoring	0	0
Record Keeping	0	0

**Ground Water Rule**

(All water systems who use ground water as their source water have to monitor for the Ground Water Rule.)

Type of Violation	Number of Violations	Number of Systems
Sanitary Survey – Failure to Address Deficiency	13	5
Sanitary Survey – Failure to Consult	16	16
Treatment Technique	0	0
Monitoring/Reporting/Recordkeeping	0	0

**Administrative Orders Issued**

The Public Water System Program issues an administrative order when a public water system is significantly out of compliance. (Each contaminant has different parameters that indicate what constitutes “significantly out of compliance.”) Once an administrative order is issued, MCL violations continue to be issued, but no other formal enforcement is initiated while the administrative order for violating that particular maximum contaminant level is in effect. Failure to comply with the terms of an administrative order can result in action by the Department to revoke the system’s permit to operate.

	Total Coliform MCL	Total Coliform Monitoring	Nitrate	Selenium
Number of Orders	4	2	5	1
Population Affected	4470	355	1521	760

The number of administrative orders for Total Coliform MCL violations decreased by 14 in 2016 and Total Coliform Monitoring decreased by three. Five administrative orders were issued for nitrates, one less than 2015.

**Variances and Exemptions**

No variances or exemptions were issued in 2016. When they are issued, they require the approval of the Advisory Council on Public Water Supply.

**MCL Violations other than Total Coliform/RTCR and Nitrate**

All maximum contaminant level violations other than total coliform and nitrate are considered to be chronic in nature, i.e., the adverse health effects are evident only after exposure over a long period of time. These contaminants are listed at the end of this report. When a contaminant other than total coliform and nitrate is present in a water system, the public water system must monitor quarterly for that contaminant. If the level decreases, the monitoring frequency may be reduced. A public water system is issued an administrative order to correct a chronic contamination problem after a specified number of MCL violations are issued. If the contaminant is measured above the “unreasonable risk to health” level, an administrative order is issued immediately.

**Population Affected by Various Contaminants**

Contaminant	Population
Arsenic	11,187
Uranium Mass	87
Nitrate/Nitrite	31,373
Selenium	1930



**Laboratory Services**

The DHHS Public Health Environmental Laboratory tested more than 73,000 samples in 2016, which was over an 8% increase from last year. Approximately 58% of the laboratory's tests are for public water systems across the state. Around 28% of the lab's testing was performed for the Nebraska Department of Environmental Quality, primarily in their Water Quality Division. About 2.3% was directly for the Nebraska Drinking Water program. Private customers accounted for about 9% of the samples. Total coliform still accounts for about 34% of the laboratory tests. Total coliform testing has a very short holding time of 30 hours from collection to incubation, so ongoing US Postal Service issues continue to cause a struggle for clients to get their samples to the lab on time.

Of the Colilert presence/absence tests, 4.26% were positive for Total Coliform and 1.82% of those were positive for *E. coli*. Of the Colilert Quantitray tests, 24.8% were positive for Total Coliform and 3.64% of those were positive for *E. coli*.

The following table shows a comparison of the larger volume test numbers for the last few years:

Test Type	2016	% Change from CY2015	2015	2014	2013
Total Coliform/ <i>E. coli</i>	25,000	3.5	24,143	23,839	23,061
Nitrate	8,070	4.1	7,753	7,806	7,744
Lead/Copper	5,753	40.8	4,086	4,224	4,774
VOCs (Volatile Organic Compounds)	1,091	1.7	1,073	1,018	989
Pesticides	761	9.8	693	551	944
Uranium (mass)	553	-21.3	703	819	600

Arsenic	1,454	-2.5	1,491	1,148	1,273
Blood Alcohol	1,373	-34.3	2,091	2,165	2,094
Chloride	3,001	21.1	2,479	2,571	2,236
Total Suspended Solids	3,095	16.8	2,650	2,590	2,325

**Number of Tests by Analytical Area**

Analytical Area	Test Count	% of Total	Change from 2015
Organics and Radon	3,926	5.9	+1.71%
Inorganics	26,646	32.1	+13.2%
Metals/Minerals	14,616	18.9	+19.0%
Bacteriological	25,279	37.5	+3.51%
Air	479	0.7	+1.05%
Alcohols	1,373	3.2	-34.3%
Routine Contract Lab	1,020	1.6	-2.29%

The laboratory purchased a new UV-Vis spectrophotometer to replace one that was 15+ years old and had reached the end of serviceability, and purchased two new deionization water systems that were 12+ years old for the same reason. The lab will continue to replace old equipment due to age and serviceability as funding becomes available.

The lab continues to hold costs down so lab fees remain the same. Laboratory fees have not increased since July 2013. Use of the pay portal to pay invoices by credit card, debit card, or electronic check has been popular with customers. This website became active in January 2016.

The Drinking Water Laboratory Certification Office currently certifies five labs for coliform and two labs for nitrate testing.

For more information call the Environmental Health Laboratory at (402) 471-2122.

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ATTACHMENT A

*Definition of a Public Water System in the Safe Drinking Water Act:*

Public water system means a system for providing the public with water for human consumption through pipes, or after August 5, 1998, other constructed conveyances, if such system has at least fifteen service connections or regularly serves an average of at least twenty-five individuals daily at least sixty days per year.

Public water system includes:

- any collection, treatment, storage, and distribution facilities under the control of the operator of such system and used primarily in connection with such system and any collection or pretreatment storage facilities not under such control which are used primarily in connection with such system. Public water system does not include a special irrigation district. A public water system is either a community water system or a non-community water system.

Service connection does not include a connection to a system that delivers water by a constructed conveyance other than a pipe if:

- (i) the water is used exclusively for purposes other than residential uses, consisting of drinking, bathing, cooking, and other similar uses,
- (ii) the department determines that alternative water to achieve the equivalent level of public health protection provided by the Nebraska Safe Drinking Water Act and rules and regulations under the act is provided for residential or similar uses for drinking and cooking, or
- (iii) the department determines that the water provided for residential or similar uses for drinking, cooking and bathing is centrally treated or treated at the point of entry by the provider, a pass-through entity, or the user to achieve the equivalent level of protection provided by the Nebraska Safe Drinking Water Act and the rules and regulations under the Act.

Special irrigation district means an irrigation district in existence prior to May 18, 1994, that provides primarily agricultural service through a piped water system with only incidental residential or similar users if the system or the residential or similar users of the system comply with exclusion provisions of subdivision (ii) or (iii) of this subdivision.

ATTACHMENT B

## Safe Drinking Water Standards

The purpose of setting drinking water standards is to limit the level of contaminants that can be in water which the citizens of Nebraska consume so that they are protected from harm.

Contaminants which might be found in water are grouped into three categories:

1. **Natural pathogens:** These are disease-causing microorganisms that can occur in source water or in the distribution system. They can be bacteria, protozoans, or viruses. These organisms can be transmitted by humans, and in many cases by animals. Exposure to them in even small amounts in drinking water can cause illness rapidly. Examples include *Cryptosporidium* and *giardia lamblia*.
2. **Organic, inorganic and radioactive chemicals:** These can be man-made, or they may occur naturally. Examples include carbon tetrachloride (organic – carbon-based), arsenic (inorganic -- compounds which are not carbon-based), and radon (radioactive). Health effects from most of these substances occur after long-term exposure to low concentrations. These substances may come from a variety of sources, such as contamination of the aquifer or from naturally occurring elements.
3. **Treatment Process Chemicals and Byproducts:** Disinfectants and coagulants are chemicals used in treatment plants to purify drinking water. Some of the chemicals have health effects themselves and must be used carefully. With other substances, the treatment, such as chlorine, may produce chemical byproducts, such as trihalomethanes, which may be harmful to health.

Between 1975 and 1980, EPA established standards for 23 different contaminants. With the passage of the Safe Drinking Water Act in 1974, EPA specified a maximum contaminant level (MCL) and a monitoring or sampling frequency for each contaminant. Minimum treatment requirements were established for contaminants that could not be monitored in a practical way.

In the 1980s, reports of drinking water contamination by substances such as industrial solvents and pathogenic organisms aroused concern about the adequacy of the program. The 1986 Amendments to the Safe Drinking Water Act required EPA to address 87 new contaminants within three years, to be followed by regulation of 25 more contaminants every three years thereafter. To date, all but seven of the 1986 regulations have been finalized. Public water systems must test for the following contaminants.

### Inorganic Chemicals

All the following maximum contaminant levels (MCLs) for inorganic chemical contaminants apply to community water systems. All the following MCLs for inorganic chemicals, except the MCL for fluoride, apply to Non-transient, non-community water systems. Only the MCLs for nitrate, nitrite, and total nitrate and nitrite apply to transient, non-community systems.

**Inorganic Contaminants**

**MCL (mg/l)**

Antimony	0.006
Asbestos (fibers >10 $\mu$ m)	7 million fibers/liter
Arsenic	0.05
Barium	2
Beryllium	0.004
Cadmium	0.005
Chromium total	0.10
Cyanide (as free cyanide)	0.2
Fluoride*	4.0
Mercury	0.002
Nickel	0.1
Nitrate (as Nitrogen)	10
Nitrite (as Nitrogen)	1
Total Nitrate and Nitrite (as Nitrogen)	10
Selenium	0.05
Sodium	500.0
Thallium	0.002

\*Community water systems experiencing fluoride levels above 2.0 milligrams per liter must notify the public.

**Synthetic Organic Chemicals**

The following maximum contaminant levels for organic chemical contaminants apply to community and non-transient, non-community water systems.

**Volatile Organic Chemical Contaminants**

**MCL (mg/l)**

1,1-Dichloroethylene	0.007
1,1,1-Trichloroethane	0.2
1,1,2-Trichloroethane	0.005
1,2-Dichloroethane	0.005
1,2-Dichloropropane	0.005
1,2,4-Trichlorobenzene	0.07
Benzene	0.005
Carbon tetrachloride	0.005
cis-1,2-Dichloroethylene	0.07
Dichloromethane	0.005
Ethylbenzene	0.7
Monochlorobenzene	0.1
o-Dichlorobenzene	0.6
para-Dichlorobenzene	0.075
Styrene	0.1
Tetrachloroethylene	0.005
Toluene	1
trans-1,2-Dichloroethylene	0.1
Trichloroethylene	0.005
Vinyl chloride	0.002
Xylenes (total)	10



<u>Non-Volatile Synthetic Organic Chemical Contaminants</u>	<u>MCL (mg/l)</u>
2,3,7,8-TCDD (Dioxin)	3 x 10 <sup>-8</sup>
2,4-D	0.07
2,4,5-TP	0.05
Alachlor	0.002
Atrazine	0.003
Benzo[a]pyrene	0.0002
Carbofuran	0.04
Chlordane	0.002
Dalapon	0.2
Di(2-ethylhexyl)adipate	0.4(22)
Di(2-ethylhexyl)phthalate	0.006
Dibromochloropropane	0.0002
Dinoseb	0.007
Diquat	0.02
Endothall	0.1
Endrin	0.002
Ethylene dibromide	0.00005
Glyphosate	0.7
Heptachlor	0.0004
Heptachlor epoxide	0.0002
Hexachlorobenzene	0.001
Hexachlorocyclopentadiene	0.05
Lindane	0.0002
Methoxychlor	0.04
Oxamyl (Vydate)	0.2
Pentachlorophenol	0.001
Picloram	0.5
Polychlorinated biphenyls	0.0005
Simazine	0.004
Toxaphene	0.003

### Microbiological

The maximum contaminant levels for coliform bacteria, applicable to all public water systems, are as follows:

The MCL is zero, based on the presence or absence of total coliforms and/or *E. coli* in a sample, rather than coliform density.

Radionuclides

Combined radium-226 and radium-228 - 5 pCi per liter.

Gross alpha particle activity including radium-226 but excluding radon and uranium - 15 pCi per liter.

Uranium – 30 µg/L

Disinfection Byproducts

<b>Byproduct</b>	<b>MCL (mg/L)</b>
Total Trihalomethanes (TTHMs)	0.080
Haloacetic acids (five) HAA5	0.060
Bromate	0.010
Chlorite	1.0

Maximum Residual Disinfectant Levels (MRDLs)

<b>DISINFECTANT RESIDUAL</b>	<b>MRDL (MG/L)</b>
Chlorine	4.0 (as Cl <sub>2</sub> )
Chloramines	4.0 (as Cl <sub>2</sub> )
Chlorine dioxide	0.8 (as ClO <sub>2</sub> )

Lead and Copper

Before and after a PWS evaluates corrosion control treatment, it must test for:

- pH
- conductivity
- calcium
- alkalinity
- water temperature
- orthophosphate (when an inhibitor containing an orthophosphate compound is used)
- silicate (when an inhibitor containing a silicate compound is used)

Contaminants which public water systems test for, but which are not regulated, include:

Inorganic Chemical

Sulfate

Volatile Organic Chemicals

Chloromethane	Bromomethane
Chlorodibromomethane	1,2,3-Trichloropropane
1,1,1,2-Tetrachloroethane	Chlorobenzene
Chloroethane	m-Dichlorobenzene
2,2-Dichloropropane	1,1-Dichloropropene
o-Chlorotoluene	1,1-Dichloroethane
p-Chlorotoluene	1,1,2,2-Tetrachloroethane
Bromobenzene	1,3-Dichloropropane
1,3-Dichloropropene	

Pesticides and Other Synthetic Organic Chemicals

Aldrin	3-Hydroxycarbofuran
Butachlor	Methomyl
Carbaryl	Metolachlor
Dicamba	Metribuzin
Dieldrin	Propachlor

ATTACHMENT C

## Advisory Council on Public Water Supply

Members as of December 31, 2016.

Glen Dostal (engineer), Omaha

Vacant (physician)

Ivan Van Dyke, (consumer), Norfolk

Robert Johnson, (consumer), Hastings

Paul Markowski (licensed operator of system serving 5,000 or fewer persons), Ord

Christopher Fox (licensed operator of a system serving over 5,000 persons), Omaha

Steven Kelley (member of a governing board of a public water system), Beatrice

Members of the Advisory Council are appointed by the Governor for three-year terms. They can be reappointed until they have served three consecutive three-year terms. In 2016, the Council met once.