

Nebraska's Public Water System Program 2008 Annual Report

January 1 to December 31, 2008

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

December 31, 2009

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<http://www.dhhs.ne.gov/enh/pwsindex.htm>

Available in alternate formats

To Obtain a Copy of the 2008 Public Water System Report

As required by the federal Safe Drinking Water Act, the State of Nebraska has made the 2008 Public Water Systems report available to the public. Interested individuals can obtain a copy of the 2008 Annual Public Water Systems Report for Nebraska by accessing:

The Department's Web site: <http://www.dhhs.ne.gov/enh/pwsindex.htm>

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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. EPA requires PWSs to notify the public when they have violated these regulations. 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 SDWA applies to the 50 states, Puerto Rico, the United States Virgin Islands, American Samoa, Guam, the Northern Mariana Islands, the District of Columbia, and Indian Lands.

The SDWA allows states and territories to seek EPA approval to administer their own PWSS programs. 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 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 Navaho 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. Data include, but are not limited to, public water system (PWS) inventory information; the incidence of Maximum Contaminant Level (MCL), 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 Navaho 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 2008, 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 arenas to assure safe drinking water.

More information about systems with violations that occurred in 2008 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

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

<http://www.dhhs.ne.gov/enh/pwsindex.htm>.

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 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. 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 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** (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** 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** 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 are 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. Treatment techniques include the use of aeration, settling, filtration or other physical process and/or the addition of any chemical or chemicals for the purpose of removing, deactivating, or adjusting the level of one or more contaminants present in the raw water supply source.

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://www.dhhs.ne.gov/req/t179.htm>).

Nebraska's Public Water Systems

Population and Type of System

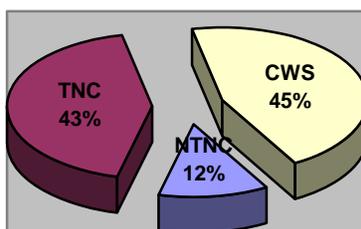
Nebraska public water systems can be broken down into categories based on the size of the population served.

Population	CWS	NTNC	TNC	Total Systems	Percentage*
25-100	80	87	437	604	45.3%
101-500	287	56	121	464	34.8%
501-1000	102	6	13	121	9.1%
1001-3300	90	10	1	101	7.6%
3301-10,000	25	3	0	28	2.1%
10,000-50,000	12	0	0	12	0.9%
>50,000	2	0	0	2	0.2%
TOTAL	598	162	572	1332	100%

CWS = Community 598 systems
 NTNC – Non-transient, non-community 162 systems
 TNC = Transient, non-community 572 systems

* Percentages have been rounded off.

System Types



Public Water In Nebraska

The Division of Public Health of the Department of Health and Human Services, through its Public Water System Program, administered the State's Regulations Governing Public Water Systems (Title 179 NAC 2 through 22), 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 1,330 public water systems in Nebraska. (The number of public water systems varies as new ones open and old ones close.) Public water systems provide water to approximately 80 percent of the people of Nebraska. Private domestic wells provide water for other Nebraskans.

Most of the water Nebraskans drink is groundwater. Only five public water systems in the state obtain their drinking water from surface water. Another 31 systems purchase water from those five systems. In addition, five systems utilize groundwater under the influence of surface water, and 19 additional systems purchase water from those five systems. The remaining systems use ground water, including 95 systems that purchase their water from another system.

The 1996 Amendments to the Safe Drinking Water Act require each state to publish a report each year that includes the violations which occurred in the state during 2008. 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.

New In 2008

Siting, Design and Construction of Public Water Systems

In an effort to keep up with the new water treatment technologies and design standards, the process of updating Title 179 NAC 2-007, *Siting, Design and Construction of Public Water Systems*, was initiated in early 2008. A diverse group of professionals in the drinking water related industry were invited to participate in the stakeholder meetings. After a series of three stakeholder meetings conducted, a consensus document was developed.

LB 245 – Fluoridation

LB 245 was passed by the legislature, requiring fluoridation of the drinking water of any city or village with a population of one thousand or more persons unless the city or village has sufficient amounts of naturally occurring fluoride in its water supply. The date to have the fluoridation in place is June 1, 2010.

The bill also provided for voters of any city or village that is required to fluoridate and in which fluoride was not added as of January 1, 2008, to adopt an ordinance after the effective

date of the bill, but before June 1, 2010, to prohibit the adding of fluoride to the water supply. The ordinance can be placed on the ballot by a majority vote of the governing body of the city or village or by initiative.

Fees for laboratory certification program

The Department's Environmental Health Laboratory began the process of updating the fees for Drinking Water Laboratory Certification. The new fees will better reflect what it costs the laboratory to manage the Drinking Water Certification program and perform the required audits. The fee bill passed the legislature and became law July 18, 2008.

What Nebraska's Public Water System Program Does



The Public Water System Program has 35 full time equivalent positions (FTEs). The Monitoring and Compliance Section has 13, the Engineering Section has eight, the Field Services and Training Section has 13, and portions of two other FTEs contribute to the administration of the program.

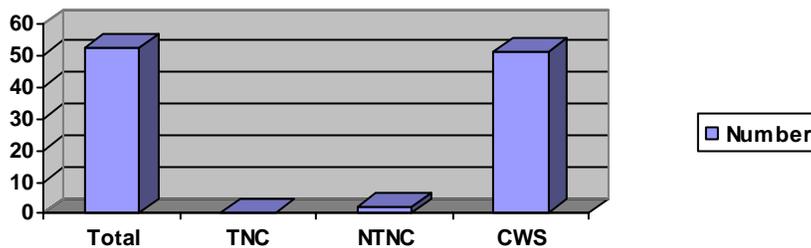
Field Services and Training Section

Public Water System Field Services Section personnel conduct sanitary surveys, train public water system operators, attend and/or 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. Field offices are located in North Platte, Grand Island, Norfolk, Omaha, and Lincoln to provide close contact and timely assistance to Nebraska's public water systems.

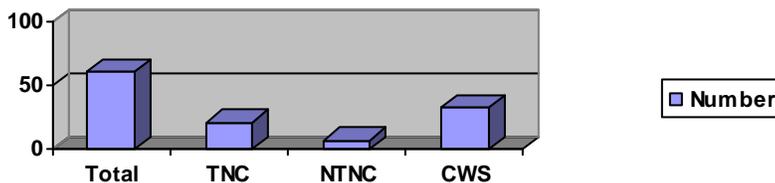
Routine sanitary surveys are conducted once every three years for community water systems (CWS) and non-transient non-community (NTNC) public water systems and once every five years for transient non-community (TNC) PWSs. A sanitary survey is an on-site review of the water source, facilities, equipment, 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. Field personnel also check for the presence of a certified water operator, an emergency plan, and a cross-connection control program.

In 2008, field personnel conducted 358 sanitary surveys (187 community, 52 non-transient non-community, and 119 transient public water systems) and 77 follow-up surveys (36 community, 7 non-transient non-community, and 34 transient public water systems) in Nebraska. When deficiencies are found, the system is notified of the needed improvements. A total of 745 deficiencies were found in 2008 (97 fewer deficiencies than the previous year, with 44 fewer sanitary surveys having been done) which reflects an overall deficiency rate of 2.08 deficiencies per sanitary survey. There was an average of 2.9 deficiencies found in community systems, an average of 1.7 deficiencies found in non-transient non-community water systems, and an average of 0.9 deficiencies in transient water systems. The Department sees the continued reduction in the total number of deficiencies compared to the total number of sanitary surveys each year as a sign that capacity development, the Department's effort to help systems improve their finances, management, infrastructure and operations, is working.

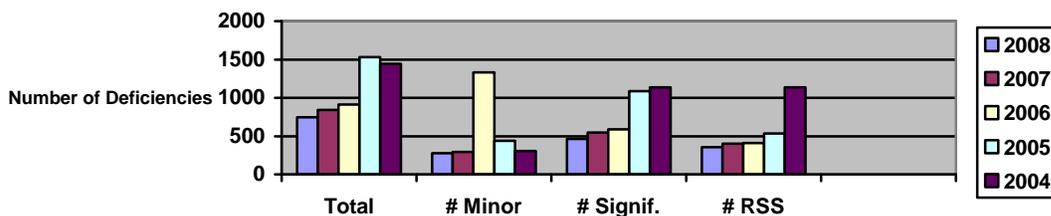
Site Surveys



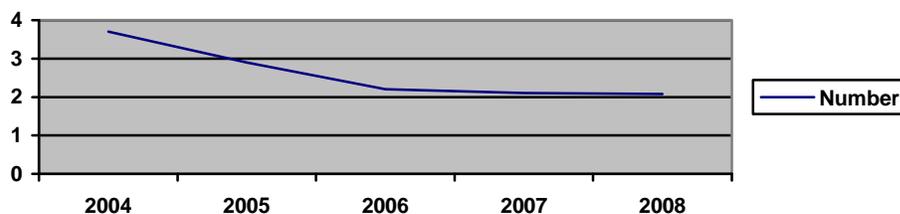
Routine Sanitary Survey Follow Up Surveys



5 Year Deficiency Comparison



Average Number of Deficiencies Found During Routine Sanitary Surveys



Field personnel conduct site inspections for the location of new wells in addition to assisting engineering services personnel in conducting 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 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 assist in locating portable generators or tank transport units. 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.

Field personnel conduct courses to train water operators. In addition to enhancing water operators' basic knowledge, these courses give the operators an opportunity to meet with state field staff to ask questions about what is expected of them as they do their jobs.

In 2008, field personnel conducted 9 water operator training classes with a total of 135 attendees. An additional 12 persons took the correspondence course that is also offered for Grade 4 licensure. For Grade 6 licensure (backflow preventer testing and repair), 13 courses were offered with a total of 104 attendees. For Grade 5 licensure (transient systems only), 50 exams were given and 48 individuals passed.

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 at each level.

Grade	Number of Licenses Issued
1	1
2	5
3	24
4	106
5	49
6	115

A total of 171 workshops/seminars/conferences were offered in Nebraska in 2008 for the purpose of water operator continuing education. Of these, 41 focused primarily on backflow continuing education for Grade 6 operators.

Field personnel joined other professionals in educating children on the value of groundwater at the annual Children's Groundwater Festival in May.

The Drinking Water Program and other training providers offered continuing education opportunities for water operators in 2008. Coordinated by the program, a group informally known as the Water Operator Training Coalition convened periodically in 2008 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 2008, as in past years, the Coalition produced a calendar identifying dates and locations of continuing education opportunities for distribution to certified water operators.

The Capacity Development Coordinator has been overseeing the Department's 2% contracts with the various technical assistance providers – the 2% Team. The name comes from the 2% set-aside from the Drinking Water State Revolving Loan Fund). In addition, Capacity Development training has been provided across Nebraska to owners (board members) and operators of public water systems. A concerted effort has been made to educate the water system operators regarding their role in developing and maintaining adequate capacity for their water systems.

The 2% Team provides continuing education for water operators and also assists the Department in helping systems with capacity development. The agencies assisting the Department provide 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 conducted 20 National Incident Management (NIMS) training sessions across the state, which included the IS100, IS200 and IS700 courses. These training sessions were day-long events. Approximately 288 people attended, including water operators, board members, fire and rescue personnel, law enforcement and public health personnel. The Department also conducted a tabletop exercise in McCool Junction with the water operator and board members. The scenario was a severe weather event that totally disrupted water and wastewater operations.

On a quarterly basis the Department conducts an unannounced drill with all 11 field staff through the automated notification system (MIR3). Of the four that were conducted, the Department averaged a 90% call back rate from staff.

In March the Department and field staff personnel attended one day training on the communications capabilities of the Department. The training included an overview of all the communications equipment and hands-on training of the use of this equipment. All but one field staff has the Motostat Satellite radio installed in their vehicles.

Also in March Department personnel attended a Continuity of Operations planning workshop. This workshop was used to put a plan together and understand the process if it is activated.

In September the Department conducted two one-hour presentations at the Nebraska Rural Water Association annual conference in Gering. The first session was on Continuity of Operation (COOP) planning for water operators. This training included an overview of what COOP planning is. The Department provided the systems with a template to put a plan together. The second session was on Pandemic Influenza planning. This training provided an overview of what Pandemic Influenza is, what stages we were at and what triggers a pandemic. Approximately 125 water operators were in attendance.

Also at this conference the Department produced 86 water operator ID badges. These badges are a project of the Department to have each water operator properly identified before an event occurs. These ID badges have been recognized by Nebraska Emergency Management Agency as an official badge for water operators to enter an area if the need arises.

The Department received 139 emergency calls in 2008. Of these calls, nine were because of positive coliform samples and the remaining calls were related to fuel spills, fertilizer spills, wastewater releases, etc.



Engineering Services Section

The Engineering Services Section provides engineering plan review; inspection of newly constructed projects for issuance of final 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 and thus 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 costs are committed by the system owner. 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 2008, the Department received 126 sets of plans and specifications for review and approval,

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).

At the beginning of the 2008 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. Nebraska's PWS systems returned 474 surveys indicating approximately \$268 million in infrastructure needs. The ranking system developed by the Department was used to prioritize and establish the funding order for DWSRF projects. From that prioritization, the DWSRF closed six loans in 2008 that totaled \$9.2 million. High priority status projects, which are those that address water quality issues, accounted for four of the six loans that were closed. The Annual Report on the State Fiscal Year (SFY) 2008 DWSRF Program was prepared by staff and submitted to the EPA in the fall of 2008. The EPA presented a favorable review of that report at the annual review meeting held during the week of November 12-14, 2008.

In the fall of 2008, 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 297 systems with infrastructure needs of \$482 million were identified for inclusion in the draft SFY 2010 IUP. On October 27, 28, 30 and November 3, 2008 four public informational meetings were held in Holdrege, Alliance, Norfolk and Lincoln, respectively, to discuss and solicit any proposed changes to the next IUP.

During 2008, the Engineering Services Program completed the 2008 EPA Needs Survey. A total of twenty-one (21) medium-size public water systems and two large systems were surveyed for their infrastructure needs over the next 20 years. In addition, the program assisted EPA's contractor in performing similar surveys in ten small systems. EPA announced \$1.8 billion drinking water infrastructure need for Nebraska over the next 20 years.

An informational meeting for professional engineers who submit plans and specifications for drinking water projects to the Department was held in Lincoln on August 20, 2008. Topics presented included new and future regulations, federal and state funding/loan programs,

research activities, and drinking water issues in Nebraska. Attendees at this meeting were provided with four continuing education units.

The engineering services staff also work with NDEQ in evaluating encroachment issues that may be of concern to public drinking water wells.

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

from January 1, 2008, to December 31, 2008

ACTIVITIES	NUMBER
Water Projects Received for Review and Approval	126
Water Projects Inspected	137
Major Engineering Reports for Water System Improvements Evaluated	19
New Water Well Sites Evaluated	29
Common Pre-Applications for Water/Wastewater Projects for Federal and State Financial Assistance Reviewed	0
Operation and Maintenance Manuals for Drinking Water State Revolving Loan Funded Projects Reviewed	1

Of significant note in 2008 was the final inspection of the Metropolitan Utilities District's 104 mgd Platte West Water Treatment Plant. This plant will allow the District to meet the drinking water needs of the Omaha metro area for years to come. Several program staff performed numerous inspections of a new wellfield, raw and finished water transmission mains, treatment plant, clearwell and pumping station for the Platte West facility. In conjunction with the District's Florence and Platte South treatment plants, the system has established a "triangle of reliability) to ensure an adequate supply of safe drinking water for the most populated region in Nebraska.

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 (MCLs) and issue appropriate enforcement actions when necessary. They determine PWS sample schedules and arrange for the appropriate sampling kits to be sent from the Department Public Health Environmental Laboratory.

Safe Drinking Water Information System

The Safe Drinking Water Information System (SDWIS) is now 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 computer system was developed by EPA for states to report

water quality data. It provides information on all public water system facility information, test results, violations, compliance assistance, enforcement, compliance schedules, water operator certification, 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 in 2008

There were no waterborne diseases or deaths reported from Nebraska public water systems in 2008.

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. If a public water system fails to take the required water samples, a monitoring violation occurs.

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.

In 2008, only **7** of **87** contaminants for which community public water systems monitor were found in quantities above the MCL. That means **80 contaminants** for which monitoring was conducted **were not found above the MCL in any community water system in Nebraska.**

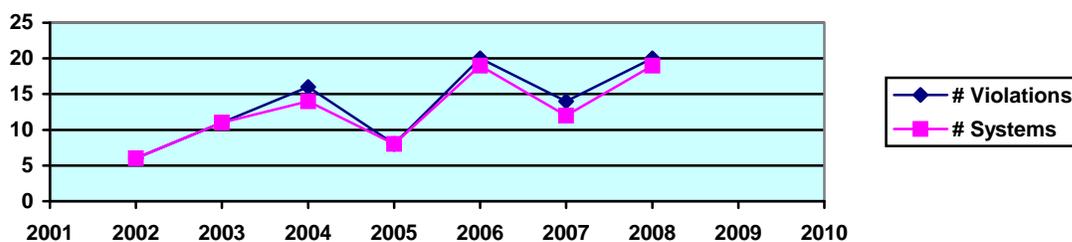
The following tables summarize the types of violations issued in calendar year 2008 and the number of public water systems that received violations. There were a total of 543 violations from 279 public water systems for MCL, monitoring, and treatment technique violations. There were also 20 public notice violations from 19 public water systems.

Total Coliform Violations

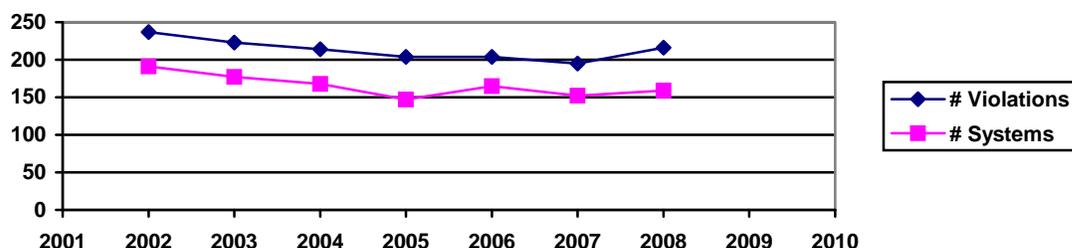
(All public water systems must monitor for total coliform)

Violation Type	Number of Violations	Number of Systems	Systems With Violations
Acute MCL	20	19	1.4%
Non-Acute MCL	216	159	11.9%
Major Monitoring	84	75	5.6%

Acute MCL Violations



Non-Acute MCL Violations



Several types of coliform bacteria are found in the environment and in the intestinal tract of humans and warm blooded animals. Total coliforms in themselves, are not harmful. But where total coliform are found, other pathogens may also be found. 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.

Total coliform violations occur when the Maximum Contaminant Level has been exceeded. A non-acute violation occurs when only total coliform is involved. Public water supply systems must notify the public about the potential adverse health effects and take corrective action. An acute violation occurs when one or more samples indicate total coliform and *E. coli*, a fecal coliform bacteria. The water system must notify the public and issue a boil water advisory until the system has done additional testing and has found that the system again meets the safe drinking water standards.

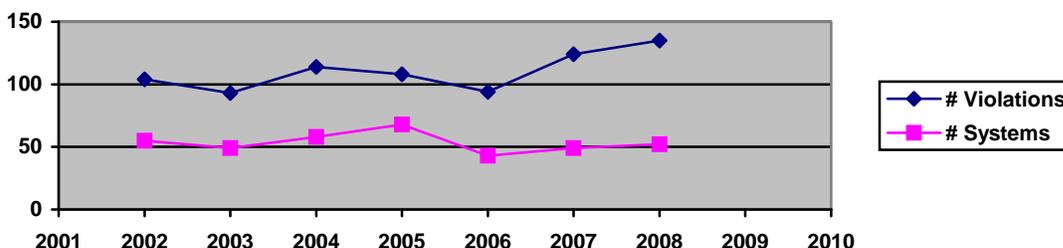
If a community water system is issued four total coliform violations in a twelve month period, or a non-community water system is issued three violations in a twelve month period, the system will be issued an Administrative Order requiring a minimum of six months disinfection.

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.)

Violation	Number of Violations	Number of Systems	Systems With Violations
MCL – 10 mg/l	135	52	3.9%
Monitoring	16	14	1.1%

Acute Nitrate MCL Violations



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.

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

Volatile Organic Chemical Violations

(Community and non-transient non-community systems monitor for VOCs)

Contaminant	Number of MCL Violations	Number of Monitoring Violations	Number of Systems	Systems With Violations
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%

Contaminant	Number of MCL Violations	Number of Monitoring Violations	Number of Systems	Systems With Violations
Tetrachloroethylene	0	0	0	0.0%
Styrene	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 Violations

(Community and non-transient non-community systems monitor for inorganic chemicals)

Contaminant	Number of MCL Violations	Number of Monitoring Violations	Number of Systems	Systems with Violations
Antimony	0	0	0	0%
Asbestos	0	0	0	0%
Arsenic	5	0	2	0.7%
Barium	0	0	0	0%
Beryllium	0	0	0	0%
Cadmium	0	0	0	0%
Chromium total	0	0	0	0%
Cyanide (as free cyanide)	0	0	0	0%
Fluoride	0	0	0	0%
Mercury	0	0	0	0%
Nickel	0	0	0	0%
Selenium	3	0	1	0.4%
Sodium	0	0	0	0%
Thallium	0	0	0	0%

Non-Volatile Synthetic Organic Chemical Contaminants

Contaminant	Number of MCL Violations	Number of Monitoring Violations	Number of Systems	Systems with Violations
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%

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Contaminant	Number of MCL Violations	Number of Monitoring Violations	Number of Systems	Systems with Violations
Carbofuran	0	0	0	0%
Chlordane	0	0	0	0%
Dalapon	0	0	0	0%
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 Radium, Excluding Radon and Uranium	0	0	0	0.0%
Uranium Mass	42	0	14	2.3%
Combined Radium (Radium - 226 and Radium -228)	1	0	1	0.2%

Disinfection Byproducts

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 Monitoring Plan

	# Violations	# Systems
Failure to have a plan	0	0

Disinfectant Residual

MRDL	Treatment Technique # Violations	TT # Systems	Monitoring # Violations	Monitoring # Systems
0	0	0	1	1

Lead and Copper Violations

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

Surface Water Treatment Rule Violations

Type of Violation	Number of Violations	Number of Systems
Treatment Technique	4	1
Monitoring	8	2

Interim Enhanced Surface Water Treatment Rule Violations

Type of Violation	Number of Violations	Number of Systems
Treatment Technique	1	1

Administrative Orders Issued in 2008

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	Nitrate	Lead and Copper OCCT
Number of Orders	12	3	2
Population Affected	3,171	686	1,140

The number of administrative orders for Total Coliform Monitoring violations decreased from 2 to 0. The number of administrative orders for Total Coliform MCL violations increased from 9 in 2007 to 12 in 2008. Three administrative orders were issued for nitrates, one for lead and copper, and one for the Surface Water Treatment Rule.

Bilateral Compliance Agreements

A bilateral compliance agreement is typically an agreement between the Department and a non-community public water system, such as a factory or school. This agreement allows a non-community public water system to operate with nitrate levels between 10.5 mg/l and 20 mg/l. The public water system must ensure that:

- Water above 10 mg/l will not be available to children under six months of age and pregnant or nursing women;
- A notice is continuously posted saying that the nitrate level in the water is above 10 mg/l and what the potential health effects of exposure are; and
- No adverse health effects will result from exposure to this water.

The non-community water system must submit an annual report to the Department which includes receipts for bottled water or other alternate sources of safe drinking water, copies of posted notices, and a statement that no known adverse health effects have occurred. In 2008, the Department entered into bilateral compliance agreements with two non-community public water systems, the same as the previous year.

Bilateral compliance agreements can also be utilized in situations dealing with community water systems.

Variances and Exemptions

No variances or exemptions were issued in 2008. When they are issued, they require the approval of the Advisory Council on Public Water Supply.

MCL Violations Other Than Total Coliform 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.

Laboratory Services



The DHHS Public Health Environmental Laboratory tested a total of 65,750 samples in 2008. All radiological testing, except radon in water and some limited miscellaneous testing (endothall, dioxin, and asbestos) were sent to the Lab's contract laboratory, Energy Laboratory in Casper, Wyoming. The Laboratory's data objective is to provide technically valid, legally defensible quality data for all Nebraska drinking water samples that it analyzes. Exhaustive quality control measures are met to provide quality data to the Lab's customers. The Laboratory is also certified by the EPA to test drinking water compliance samples for public water systems.

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

Test Type	Number done in 2008	Number done in 2007	Number done in 2006	Number done in 2005
<i>Total Coliform/E.coli</i>	24,612	23,228	22,325	20,525
Nitrate	7,236	7,605	7,939	6,930
Lead/Copper	4,510	3,544	6,551	4,990
VOC's (Volatile Organic Compounds)	1,333	1,047	1,035	1,520
Pesticides	527	1,003	983	451
Uranium (mass)	443	476	950	636
Arsenic	970	824	1,615	1,028

The Laboratory started the developing phase of a new Laboratory Information System Project this year. The project will take over a year to complete. It will then allow Laboratory customers to track and view their own sample results as they are received at the Laboratory through the use of a web portal. Customers will be able to choose between several different ways of receiving their reports and invoices.

The Laboratory added several new tests this year. They include iron bacteria and sulfate reducing bacteria. These two tests are easy to do and take about a week to complete. Various other tests, such as total sulfur, silica, silicon, salinity and *Cryptosporidium/Giardia* are also available through the Laboratory. A large variety of miscellaneous tests are offered through the Department Laboratory and the Department's contract laboratory.

The Laboratory received its Select Agent Registration for its Biological Safety Laboratory containment space. The Laboratory will be used for samples that may be related to a

bioterrorism event. The samples tested may include such things as water, food, powders, crystals, chemicals, and any other suspicious substance. Microbiological and/or chemical composition can be determined depending on the nature of the substance received.

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

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 By-products:** 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 by-products, 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 nontransient noncommunity water systems. Only the MCLs for nitrate, nitrite, and total nitrate and nitrite apply to transient, noncommunity systems.

<u>Inorganic Contaminants</u>	<u>MCL (mg/l)</u>
Antimony	0.006
Asbestos (fibers >10 μ 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 nontransient, noncommunity water systems.

<u>Volatile Organic Chemical Contaminants</u>	<u>MCL (mg/l)</u>
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 ⁻⁸
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

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

Maximum Residual Disinfectant Levels (MRDLs)

DISINFECTANT RESIDUAL	MRDL (MG/L)
Chlorine	4.0 (as Cl ₂).
Chloramines	4.0 (as Cl ₂).
Chlorine dioxide	0.8 (as ClO ₂).

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, 2008:

Reed Miller (Engineer), Kearney
Leon Jons, M.D., (Physician), Crete
Jim Sheldon (Consumer), Crofton
Larry Cast (Consumer), Grand Island
David Houghtelling (Certified operator of system serving 5,000 or fewer persons), Cambridge
Jerome Obrist (Certified operator of a system serving over 5,000 persons), Lincoln
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 2008 the Council met four times.