Minnesota Drinking Water
Annual Report for 2019
Minnesota Drinking Water Annual Report for 2019

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Contents

Executive Summary ..................................................................................................................... 5
A Letter from the Manager ........................................................................................................ 7
COVID-19 Related Program Actions ........................................................................................ 8
Community Public Water System Engagement ...................................................................... 9
Noncommunity Public Water System Engagement ................................................................. 9
Program Overview .................................................................................................................... 11
How Are We Doing? .............................................................................................................. 12
Program Resources ............................................................................................................... 16
Protect Source Water ............................................................................................................... 18
Clean Water Fund Success Story: City of Mankato ............................................................... 20
Educate Minnesotans ............................................................................................................... 21
Community Outreach ............................................................................................................ 22
Poster Contest with H2O for Life .......................................................................................... 22
Drinking Water Display at the State Fair Eco Experience ..................................................... 23
Water Bar at the Capitol ....................................................................................................... 23
Crookston Is the People’s Choice for Top Water in Minnesota ........................................... 24
Noncommunity Water Video ................................................................................................ 24
We Are Water MN ................................................................................................................ 25
Train and Certify Operators ...................................................................................................... 26
Specialized Training .............................................................................................................. 27
Licensing Operators .............................................................................................................. 27
Assist Water Systems ................................................................................................................ 29
Plan Review ........................................................................................................................... 31
Construction Inspections ...................................................................................................... 31
Test Water ................................................................................................................................ 33
Public Water Systems with Health-Based Violations ............................................................ 34
2019 Monitoring Results ....................................................................................................... 34
Address Threats ........................................................................................................................ 36
Lead in Water ........................................................................................................................ 38
Perfluoroalkyl Substances ..................................................................................................... 40
DWP Response to a Growing Threat: Legionella Bacteria .................................................. 40
MDH Works with Communities to Address Manganese Issues ................................. 41
Fund Projects .................................................................................................................. 43
Source Water Protection Grants .................................................................................. 43
Drinking Water Revolving Fund ................................................................................. 46
Bottle-Filling Stations ..................................................................................................... 47
Clean Water Fund Success Story: Randall Gets Award from the Environmental Protection Agency .................................................................................................................. 47
Drinking Water Infrastructure Grant Funding Increase ............................................... 48
Infrastructure Repair and Maintenance Funding .......................................................... 48
Conclusion ....................................................................................................................... 51
Partners ............................................................................................................................. 52
Notes on Data .................................................................................................................. 53
Executive Summary

Any discussion of Minnesota’s drinking water must start with the observation that our public water systems provide very safe water. In 2019, more than 99% of Minnesotans drinking water from a public water system received water that met all federal standards throughout the year. This achievement is the product of generations of hard work and smart investment.

However, some parts of the state struggle to have enough water to meet the demands of their communities. Contaminants such as nitrate, bacteria, and arsenic continue to pose problems. And there are always challenges on the horizon, such as addressing new threats to drinking water, including pharmaceuticals, pesticides, and harmful algal blooms. The Minnesota Department of Health (MDH), public water systems, and other partners are actively engaged to identify, prevent, and resolve challenges to drinking water.

Our annual drinking water report explains the issues that have been and will remain at the forefront of our efforts, as well as the work we do to maintain safe drinking water.

This report addresses:

- How we protect source water - the first step in providing safe drinking water - with a success story about source water protection in southern Minnesota.
- Our efforts to educate Minnesotans about drinking water through exhibits, institutes for teachers, and interaction with citizens at places such as the State Fair.
- Training we provide to ensure there are qualified and licensed operators at water treatment plants.
- How we assist individual water systems with on-site consultation, as well as proactive approaches, such as reviewing plans for water facilities.
- Results from drinking water tests showing that water from a public water system is more thoroughly tested and closely regulated than water from any other source, including bottled water.
- How we anticipate and develop responses to threats to drinking water, including aging infrastructure and contaminants of emerging concern.
- How we fund projects through grants and below-market-rate loans – through the Drinking Water Revolving Fund (DWRF) and Source Water Protection (SWP) grants – to allow water systems to maintain compliance with the federal Safe Drinking Water Act and implement actions to protect drinking water sources.
- And, in a special section – a summary of how we protected drinking water in light of the first two months of the COVID-19 pandemic.

Nearly 80% of Minnesotans receive their drinking water in their homes from public water systems, while others use private wells. The Minnesota Department of Health assists 6,724 public water systems by providing or overseeing water monitoring and inspection services and helping systems prevent, find, and correct problems. MDH also helps systems plan for protection of the lakes, rivers, watersheds, and underground aquifers from which we get our
drinking water. MDH has authority for these activities under the federal Safe Drinking Water Act and Minnesota statutes and rules.

Funding sources for these activities include the U.S. Environmental Protection Agency (EPA) and the Clean Water Fund, which was created by Minnesota’s 2008 Clean Water, Land, and Legacy constitutional amendment.

Another funding source is the Safe Drinking Water Fee, which directs municipal water systems to collect and forward funds to MDH to cover the cost of testing public water systems as well as for inspections, source water protection plans, and technical assistance to the public water systems in the state. In 2019, the Minnesota Legislature voted to increase the Safe Drinking Water Fee from $6.36 to $9.72 per service connection per year starting in 2020. This was the first increase in the fee in 14 years.

During this time, inflation raised costs 28% while additional challenges have arisen, such as addressing new threats to drinking water, like pharmaceuticals and harmful algal blooms. MDH temporarily relied on the Drinking Water Revolving Fund to cover the difference, but this decreased the funding available for community infrastructure improvements.

The fee increase has allowed MDH to reduce the drinking water program’s dependence on DWRF and to restore $80 million over 20 years for local infrastructure needs.

The Safe Drinking Water Fee also allows MDH to add staff to provide assistance to public water systems and provides funding for laboratory costs for water testing, data management and reporting, and grants to disadvantaged communities.
A Letter from the Manager

Greetings,

As we issue this report, we are responding to the coronavirus disease 2019 (COVID-19) pandemic. Our priority is working with public water suppliers to keep them up and running and in compliance with the Safe Drinking Water Act while keeping our employees and others safe.

Through floods, tornadoes, and other national disasters that shut down businesses and other operations, public water systems have been remarkably consistent in maintaining a safe supply of water for their customers. COVID-19 is a challenge like never before, but the drinking water profession continues to come through.

Because of the overwhelming impact of COVID-19 on our activities, this year’s report contains a special section that highlights the first couple of month’s activities related to the pandemic. We will have more to say about this in next year’s report.

As always, it is a privilege to oversee one of the top drinking water programs in the United States. Our history began in the 1970s, soon after the passage of the federal Safe Drinking Water Act (SDWA). In 1977, we achieved primacy, meaning that we took over the enforcement and administration of the SDWA from the U.S. Environmental Protection Agency. Since that time, Minnesota consistently reaches approximately 99% compliance with the SDWA.

Beginning this year we will have even more tools to help us assist the more than 6,700 public water systems in the state.

With these resources, we will be able to continue our proactive approach to drinking water protection. Our services are especially helpful to small, rural water systems, which have more challenges in meeting the many standards set forth by the SDWA. Because of their smaller customer bases, these systems have fewer resources for testing, investigations, and physical improvements.

The fee increase, along with our strong relationships with drinking water operators and partnerships with other organizations (e.g., Minnesota Rural Water Association and America Water Works Association), as well as the public at large, will continue to help ensure that all Minnesotans have access to safe drinking water.

The safety of drinking water – now more than ever – is always our paramount concern.

Sandeep Burman
Manager
Section of Drinking Water Protection
Minnesota Department of Health
Special Section: Drinking Water Protection Response to Coronavirus Disease 2019

Though the COVID-19 pandemic has necessitated changes in how we do our work, the Drinking Water Protection (DWP) program at the Minnesota Department of Health (MDH) has sustained its work to keep drinking water safe for everyone, everywhere in Minnesota, in partnership with 6,724 public water systems (PWSs) across the state.

We have continued to seek out and implement the most effective ways to help provide safe drinking water while following social distancing and stay-at-home requirements and planning for re-entry into the field.

COVID-19 Related Program Actions

DWP continued to support PWSs through ongoing operations and new activities. Our approach has been to anticipate PWS needs and proactively address potential issues. We have:

- Established new webpages to house information about COVID-19 and drinking water.
- Created and shared new guidance and policy to respond to changing needs.
- Adapted sampling plans to protect the health of DWP and PWS staff while ensuring that all PWSs continue to meet Safe Drinking Water Act (SDWA) requirements for monitoring.
- Connected PWSs with resources to procure personal protective equipment.
- Modified requirements for water operator certification (e.g., grace period for submitting certification renewals) to ensure PWSs continue to have staff capacity.
- Contracted with a vendor (People Service) to provide certified water operators as needed (e.g., if all staff at a PWS got sick and were unable to work).
- Conducted internal planning, such as for procurement of personal protective equipment and for re-entry into the field, to protect the health and wellbeing of our staff.
- Connected water operators to online training opportunities.
- Engaged with PWSs through individual contacts and mass communications to provide technical assistance and support (more details below).
- Revised criteria under which public water systems could request extensions to wellhead protection planning activities in order to account for disruptions experienced during COVID-19 response.
- Researched and communicated alternatives to in-person public information meetings and public hearings that satisfied open meeting requirements.
- During March and April 2020, contributed to the MDH COVID-19 response, 15 DWP staff were reassigned to non-drinking water response activities, and numerous others volunteered for the COVID-19 public hotline.
Community Public Water System Engagement

There are 964 community public water systems throughout Minnesota. A community public water system provides water to the public in their primary living space - where people live and sleep. These systems include municipalities and other facilities such as apartment buildings, nursing homes, prisons, and college campuses. Many of these systems were directly or indirectly affected by COVID-19. For example, they had to change schedules and implement safeguards to protect staff and respond to changing water demand due to shutdowns and reduced business activity.

During March and April 2020, Community Public Water System Unit (CPWS) staff engaged with community PWSs through individual phone calls, individual emails, mass emails, and some site visits to provide technical assistance and support. CPWS staff individually engaged through calls or visits with approximately 95% of all 964 systems statewide. In addition to one-on-one engagement, once- or twice-weekly CPWS emails reached more than 3,200 community PWS and partner contacts. (An additional several thousand people were contacted via email forwarding through partner organizations like the League of Minnesota Cities, Coalition of Greater Minnesota Cities, and Minnesota Rural Water Association.)

CPWSs began to resume field operations in mid-May; direct work began to replace some remote contacts at that point.

Noncommunity Public Water System Engagement

There are 5,760 noncommunity public water systems throughout Minnesota, which include schools, restaurants, factories, resorts, churches, and many other facilities on their own water supply (well or surface water intake). Many of these facilities were directly or indirectly affected by COVID-19-related events due to shut down and stay-at-home orders, loss of customers, etc.

In order to provide technical assistance and support during the early stages of the pandemic, Noncommunity Public Water System Unit (NPWS) staff engaged with noncommunity PWSs through individual phone calls, individual emails, mass emails, and site visits.

During March and April 2020, NPWS staff individually engaged through calls or visits with 1,515 noncommunity PWSs, which represents about 25 percent of the systems statewide. NPWS targeted contacts to those systems for which we did not have email addresses in our database, had ongoing water quality issues, or that we anticipated would otherwise need assistance or direction from MDH.

Through these contacts, NPWS staff were able to add over 1,000 new email addresses to our database. In addition to one-on-one engagement, NPWS program update emails reached more than 4,600 contacts at noncommunity PWSs. NPWS sent these emails every three weeks. Targeted messages were also sent to specific types of systems, such as those relying on surface water sources such as rivers and lakes.

NPWS began phased resumption of field operations in late April; direct onsite work began to replace some remote contacts at that point.
Figure 1. Contacts with community and noncommunity water systems during the initial phase of COVID-19 (March-April 2020)

<table>
<thead>
<tr>
<th>Community Water Systems</th>
<th>Noncommunity Water Systems</th>
</tr>
</thead>
<tbody>
<tr>
<td>~1,000 systems statewide</td>
<td>~5,800 systems statewide</td>
</tr>
<tr>
<td>Emails to over 3,200 contacts 1-2 times weekly</td>
<td>Emails to over 4,600 contacts every three weeks</td>
</tr>
<tr>
<td>Phone calls and limited site visits to over 900 systems</td>
<td>Phone calls and limited site visits to over 1,500 systems</td>
</tr>
<tr>
<td>Phased resumption of field operations in mid-May</td>
<td>Phased resumption of field operations in late April</td>
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Program Overview

The Minnesota Department of Health (MDH) is responsible for enforcing the federal Safe Drinking Water Act and safeguarding the quality of drinking water in our state. This includes regulating 6,724 public water systems, encompassing community and noncommunity water systems, as shown in Figure 1.

In Minnesota, 964 community water systems provide drinking water to people in their homes. The community systems include 729 municipal systems serving towns or cities. The others serve such places as manufactured housing developments, nursing homes, and housing developments that are not connected to city water and that have their own water source. A water source can be groundwater or surface water, such as a lake or river.

Another 5,760 public water systems in the state serve water to people in places other than their homes. Known as noncommunity water systems, these include schools, factories, resorts, parks, churches, and highway rest stops that have their own water source.

Figure 1. Public Water System Classifications

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1 The numbers in this section come from Minnesota Drinking Water by the Numbers for FY2019 [https://www.health.state.mn.us/communities/environment/water/docs/waternumbers.pdf].
MDH tests all public water systems for various contaminants that could make people sick or cause health problems. The specific contaminants tested for at public water systems depends on if the system regularly serves the same people or if it provides water for different people from day to day. All water systems are tested for contaminants that could cause people to be sick with a single drink. These “acute” contaminants include nitrate and bacteria. A highway rest stop, for example, serves different people every day who may drink the water only once, so that system is tested only for acute contaminants.

On the other hand, when people drink water in their homes, schools, or businesses, they have regular and repeated exposure to that water. In addition to acute contaminants, these systems are tested for “chronic” contaminants that could cause health problems from drinking the same water over many years.

How Are We Doing?

In 2019, public water systems in Minnesota continued to successfully implement Safe Drinking Water Act requirements, as shown in Figure 2. These include standards for safe water, monitoring and reporting, public notification and education, and treatment techniques. MDH works with systems to keep them in compliance and assists systems that are out of compliance with Safe Drinking Water Act standards. MDH helps systems take corrective actions, which include informing residents of the issue and what is being done to correct it.

Figure 2. Public Water System Compliance by Type 2019

*Minnesota public water systems have high compliance with the Safe Drinking Water Act.*

<table>
<thead>
<tr>
<th>Public Water System Compliance by Type 2019</th>
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<tbody>
<tr>
<td>Minnesota public water systems have high compliance with the Safe Drinking Water Act.</td>
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</tbody>
</table>

Source: EPA Enforcement and Compliance History Online (ECHO) Drinking Water Dashboard
Safe Drinking Water Act violations include health-based violations (including treatment technique violations), monitoring and reporting violations, and public notification and education violations. In 2019, 3% of Minnesota public water systems had some type of Safe Drinking Water Act violation, far below the national average of 32%, as shown in Figure 3. In addition to being well below the national average, Figure 3 shows that Minnesota continues to reduce violations from year to year. The strategies for achieving these reductions include technical assistance from MDH staff (including engineers, planners, public health sanitarians, compliance staff, and hydrologists) and partners, training of water operators, and enforcement. The increase in the Safe Drinking Water Fee will help MDH have the resources to help public water systems.

**Figure 3. Public Water Systems with Any Violation**

*Fewer Minnesota public water systems have Safe Drinking Water Act violations than public water systems nationally.*

When testing shows that a contaminant in the water is over a federal limit, a health-based violation is issued to the public water system. Health-based violations can occur when source water quality changes or when the system has a failure in operation or treatment that can directly affect health. In 2019, 1% of Minnesota public water systems had a health-based Safe Drinking Water Act violation, below the national average of 6%, as shown in Figure 4.
Figure 4. Public Water Systems with Health-Based Violations

Fewer Minnesota public water systems have health-based Safe Drinking Water Act violations than public water systems nationally.

Public Water Systems with Health-Based Violations

Fewer Minnesota public water systems have health-based Safe Drinking Water Act violations than public water systems nationally.

Source: EPA ECHO Drinking Water Dashboard

When a public water system has a Safe Drinking Water Act violation, MDH works with the system to help it resolve the issue and return to compliance. In 2019, of the 3% of systems that had a Safe Drinking Water Act violation, about half returned to compliance within the year. This is far above the national average of 33.2%, as shown in Figure 5. The other systems continue to work toward compliance while keeping their residents informed of the situation.
Figure 5. Public Water Systems Returned to Compliance

Minnesota surpasses the national average with the percentage of public water systems returning to compliance.

![Graph showing public water systems returned to compliance]

Source: EPA ECHO Drinking Water Dashboard

Not all contaminants with the potential to affect health have enforceable standards set by the EPA. As detection techniques become more advanced, new contaminants are being discovered and investigated. MDH collaborates with partners and the public to identify contaminants of emerging concern in water. MDH scientists with experience in exposure assessment, toxicology, water resources, and communication collaborate closely with other state agencies and groups outside of MDH. Partners include the public; various local, state, and federal government agencies; academic organizations; non-profit groups; industry groups; and drinking water and wastewater professional organizations.

Partnerships such as these, with private and other public entities, are an important part of all efforts to protect health and provide safe drinking water. A list of organizations MDH partners with is at the end of this report.

MDH and its partners follow a multi-pronged approach to maintaining safe water, including treatment and monitoring. These are the not the first steps, however. Protecting water sources from contamination is a more effective and efficient way to maintain water quality. More about source water protection efforts are covered in other sections in this report.

In summary, Minnesota has fewer overall violations and a faster return to compliance than national averages. Program excellence is supported by a range of efforts and resources.

While there is much to celebrate with the overall health of Minnesotans, we must remember that inequities exist, and special challenges are present for some. For example, residents in sparsely populated areas have higher per-capita costs for drinking water. While the overall cost
of drinking water infrastructure – wells, distribution pipes, treatment plants – may be higher in the metropolitan area, the larger population using the system reduces the cost per person. In other areas, there may be fewer people to share the costs. In addition, economic challenges can make it difficult to pay for the replacement of lead plumbing and service lines. This could lead to an increased exposure to lead in drinking water for some Minnesotans.

Nationally, studies indicate that access to a safe and reliable source of water remains a challenge for many. A report by the U. S. Water Alliance\(^2\) states, “While the majority of Americans take high-quality drinking water and sanitation access for granted, millions of the most vulnerable people in the country – low-income people in rural areas, people of color, tribal communities, immigrants – have fallen through the cracks.”

Attention to the issue of health equity—recognition that positive news for most is not always positive for all—must always remain a priority.

**Program Resources**

The annual budget of MDH’s drinking water program is $20.7 million. Funding comes from a variety of federal and state sources, as shown in Table 1. There are three primary sources of funding:

- **Safe Drinking Water Fee** (also known as the Service Connection Fee): In 1992, the Minnesota Legislature established the Safe Drinking Water Fee, which directs each municipal water system to collect an annual fee for each service connection. These funds are sent to MDH to cover the costs of testing the 6,724 public water systems in the state, as well as to conduct inspections, develop protection plans, and provide technical assistance to these systems. This helps ensure that safe water is provided to people across Minnesota.

- **Environmental Protection Agency grants and set-asides**: EPA provides direct funding through the annual Public Water Supply Supervision grant and also allows states to use a portion of the funds provided for Drinking Water State Revolving Fund programs to administer the requirements of the Safe Drinking Water Act and provide for source water protection.

- **Clean Water Fund**: On November 4, 2008, Minnesota voters approved the Clean Water, Land, and Legacy Amendment (Minnesota Constitution, Article 11, Section 15) to the constitution to protect drinking water sources; to protect, enhance, and restore wetlands, prairies, forests, and fish, game, and wildlife habitat; to preserve arts and cultural heritage; to support parks and trails; and to protect, enhance, and restore lakes, rivers, streams, and groundwater. The amendment specifies that at least 5% of the Clean Water Fund be dedicated to drinking water protection. MDH’s initiatives supported by the Clean Water Fund mostly focus on source water protection.

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### Table 1. Budget for Minnesota’s Drinking Water Program

<table>
<thead>
<tr>
<th>Funding source</th>
<th>Budget</th>
<th>Percent of total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safe Drinking Water Fee</td>
<td>$10,597,000</td>
<td>51%</td>
</tr>
<tr>
<td>Environmental Protection Agency grants and set-asides</td>
<td>$6,770,540</td>
<td>33%</td>
</tr>
<tr>
<td>Clean Water Fund</td>
<td>$3,297,000</td>
<td>16%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>$20,664,540</td>
<td>100%</td>
</tr>
</tbody>
</table>

MDH deploys 107 staff to implement the Safe Drinking Water Act, assist in the development and implementation of source water protection plans, and manage compliance through extensive technical assistance and partnerships, as shown in Figure 6. Staffing levels reflect a commitment to proactively working with public water systems and other local partners to identify and fix issues before they become major public health threats.

Staff is located throughout the state – in the central office in St. Paul as well as in district offices in Bemidji, Duluth, Fergus Falls, Marshall, Mankato, Rochester, and St. Cloud. Field staff from all of these offices provide technical assistance to water operators across the state.

#### Figure 6. MDH Drinking Water Staff by Activity

- **Noncommunity system SDWA compliance, technical assistance, and supervision**: 37 staff
- **Community system SDWA compliance, technical assistance, section operations**: 31 staff
- **Source Water Protection, planning, groundwater evaluation, groundwater modeling**: 29 staff
- **Coordination of Drinking Water Revolving Fund, technical assistance, plan review, inspection**: 5 staff
- **Financial and EPA primacy management, training, enforcement**: 3 staff
- **Research related to emerging contaminants in drinking water**: 1 staff
- **Collaboration with state and local partners to promote groundwater restoration & protection strategies**: 1 staff
How MDH Provides Safe Drinking Water

The rest of this report is structured according to the bands of the water tower shown in Figure 7. The bands represent the ways in which we support the goal of providing safe drinking water to everyone, everywhere in Minnesota. Each report section corresponds with one band of the tower and contains more information about how we conduct each activity.

Figure 7.

Protect Source Water

In Minnesota, 926 community water systems use groundwater as a drinking water source. Systems with groundwater sources are required to prepare and implement Source Water Protection Plans, which outline management practices to prevent contamination of their drinking water sources. Of the approximately 3.5 million people served by systems using groundwater, 94% are served by systems with Source Water Protection Plans.
Thirty-four community water systems use or purchase surface water as their drinking water source, such as rivers and lakes. These systems serve over one million Minnesotans. The 2017 Minnesota Legislature approved use of Clean Water Fund dollars to help systems with surface water sources develop Source Water Protection Plans. Source Water Protection Plans are voluntary for community water systems using surface water. This program was piloted in the city of Fairmont and is expanding to Mankato.

In addition to the 926 groundwater and 34 surface-water systems, four community water systems in Minnesota purchase water from outside of MDH’s jurisdiction and are not required to prepare Source Water Protection Plans.

Source Water Protection Plans focus on geographical areas that provide source water to the water supply. These areas are called Drinking Water Supply Management Areas. In Minnesota, approximately 1.2 million acres of land are in Drinking Water Supply Management Areas. Approximately 400,000 acres in Drinking Water Supply Management Areas are vulnerable to contamination because of their geology.

As of December 2019, 670 public water systems have approved Source Water Protection Plans. MDH is on track to meet its goal of protecting all vulnerable community water systems under Source Water Protection Plans by 2020, as shown in Figure 8.

**Figure 8. Public Water Systems with Approved Source Water Protection Plans, by vulnerability**

*In 2020, we will meet our goal of completing Source Water Protection Plans for all vulnerable systems in Minnesota.*

Note: Data represents plans approved at the end of each fiscal year.
Clean Water Fund Success Story: City of Mankato

The city of Mankato developed a comprehensive nitrate trend monitoring program, embarked on a public-education program to accelerate the sealing of abandoned wells, and developed a water conservation and reuse program to conserve source water.

Mankato has two Ranney wells, a type of horizontal collector well, that draw water from beneath the Minnesota and Blue Earth rivers. With assistance from a Source Water Protection Grant from MDH, the city collects and analyzes water quality data from their wells, the rivers, and treated water on a more frequent basis than required by the Safe Drinking Water Act. This data collection provides information to help ensure the city provides high quality water that meets and exceeds state and federal standards.

In addition to its Ranney wells, the city of Mankato also relies on conventional wells that pump groundwater. When Mankato adopted its Source Water Protection Plan, city staff recognized that unused and unsealed wells near its wells posed a threat to its aquifer source. Accordingly, they began identifying known wells that needed to be sealed, in addition to locating more abandoned wells. So far, three of four multi-aquifer wells have been sealed. Staff are working to seal the last one.

Mankato also developed an innovative water conservation and reuse program. Since a goal is ensuring high quality water and long-term sustainability of the deep Mount Simon wells, the city partnered with private industry, city departments, and state agencies to develop a reuse program. Wastewater treatment plant effluent is being provided to a power plant for cooling as well as for internal reuse, park irrigation, and a recycle water station.
Educate Minnesotans

The more people understand the importance of safe drinking water, the more they understand the role they play in protecting water resources and maintaining water that is safe to drink. Raising awareness and educating citizens of all ages is a critical component of providing safe drinking water.
Community Outreach

The MDH Drinking Water Protection Section has been present at a number of health fairs and community events in 2019. One was at the Cedar-Riverside Health Fair at the Brian Coyle Center in Minneapolis. The event drew hundreds of residents from the neighborhood. It was reassuring to learn that attendees – most of whom were from parts of the world where they cannot trust the safety of their drinking water – drank plenty of water from Minneapolis Water Works. The jug was refilled several times because of the high demand.

Poster Contest with H2O for Life

The Minnesota Department of Health continues to partner with H2O for Life with an annual water poster contest. *Upstream, Downstream, Clean, Clean, Clean* was the theme for the 2019 contest as Minnesota students at various grade levels submitted posters with a grand prize of a bottle filling station installed in the winner’s school. The winning posters were displayed in the state capitol and at the Minnesota Department of Health exhibit in the Eco Experience building during the state fair.
Drinking Water Display at the State Fair Eco Experience

More than 200,000 people visited the Eco Experience building in 2019 with MDH’s drinking water exhibit as one of the key displays. Visitors had the chance to answer questions and learn about contaminants that can affect them. A new component of the display is a giant water faucet. People from around the state posed under it with a sign on which they wrote where their water comes from.

Water Bar at the Capitol

Water Bar – a combination of water, art, and social infrastructure – continues to pop up around the state. With watertenders serving water from various cities, Water Bar has been on site in many locations, including the State Fair and at the state capitol during Safe Drinking Water Week in 2019. Governor Tim Walz was among those in line to sip water from around Minnesota.
Crookston Is the People’s Choice for Top Water in Minnesota

The Minnesota Department of Health collaborated with the Minnesota Section of American Water Works Association (AWWA) at the Minnesota State Fair for the eighth straight year in holding the Great Minnesota Tap Water Taste Test. With the audience serving as judges, Crookston emerged as the winner among the 36 entries. The annual taste test, followed up by an appearance on WCCO Radio, has been a way to promote safe water in Minnesota and the need to protect it.

In the fall, two members of Minnesota AWWA attended a city council meeting in Crookston to present the People’s Choice Award to the city’s public works director, Pat Kelly (on the right).

Noncommunity Water Video

MDH’s Noncommunity Public Water Supply Unit produced a video, *Safe Drinking Water Wherever You Go*, that was selected to participate in a pilot project created by Hamline University’s Center for Global Environmental Education (CGEE). CGEE created the core program, focused on the Mississippi River.
The Mississippi Multimedia program has over six hours of media elements (including photo galleries, panoramas, videos, map exploration, quizzes, and historic footage) covering areas and topics from Itasca Headwaters to the Delta. In 2019, the touchscreen multimedia program was located in the St. Croix Welcome Center, one of the busiest sites in the state. This video also received a 2020 Northern Lights award from the Minnesota Association of Government Communicators.

**We Are Water MN**

We Are Water MN is a partnership formed to tell Minnesota’s water stories collaboratively, bringing together personal narratives, historical materials, and scientific information. MDH participates as an active partner with other groups, including the Minnesota Humanities Center, the Minnesota Pollution Control Agency, the Minnesota Historical Society, the Minnesota Department of Agriculture, and the Minnesota Department of Natural Resources. Partners work with host communities to build networks and provide a traveling exhibit. In April 2020, the exhibit began its third phase of travel to six host sites.
Train and Certify Operators

A major function of our drinking water program is to ensure that there are qualified and licensed operators at Minnesota’s public water systems. With the Minnesota Section of AWWA, MDH co-sponsors water operator training schools. MDH also partners with other organizations, such as Minnesota Rural Water Association, on training opportunities for operators. In 2019, MDH partnered with Minnesota AWWA on eight training schools – including several multi-day ones – and reached a total of 554 operators. MDH also administered tests for operator licensure for 578 operators.
Specialized Training

MDH has been involved in more specialized training, including seminars on advanced treatment technologies and a series of surface-water optimization training events in late 2018 through June 2019. This training uses concepts similar to both the U.S. EPA Area-Wide Optimization Program and American Water Works Association Partnership for Safe Water.

In addition, MDH, in partnership with Minnesota AWWA, continues to conduct eight-week professional operator development courses. These courses are designed to build knowledge of public water systems for the operations and management of any water utility in Minnesota. Subjects include math, filtration, disinfection, sampling, regulations, source water, water quality, and membrane and ion exchange.

Minnesota AWWA has also developed a Water Utilities Treatment and Technology (WUTT) program with St. Paul College. A non-credit series of modules, WUTT is similar to other water programs in the state along with enhancements, such as ways to serve underrepresented students who were identified through a gap analysis. St. Paul College, which is accessible by public transportation, plans to have its first classes in the fall of 2020. Students who complete the program and pass a water and/or wastewater exam will become certified operations.

Licensing Operators

New water operators are needed due to staff changes, retirements, and changes in water system classifications. Knowledgeable, certified water operators are pivotal in ensuring all Minnesotans have safe drinking water. In an effort to improve procedures, MDH looked at the time spent processing water operator certificates, as shown in the baseline in Figure 9. The time could be reduced considerably by using technology to automate some manual steps, as shown in the future projections. This would also reduce opportunities for errors and staff time.
Figure 9. Total Hours Spent Yearly on New and Renewed Licenses

It is expected that with the future e-licensing initiative, the total time spent will be reduced.

Total hours spent yearly on new and renewed licenses.

It is expected that with the future e-licensing initiative, the total time spent will be reduced.

MDH strives to have a licensed water operator at all public water systems. When an operator leaves a system without a timely replacement, the system falls out of compliance. Improvements in the process over time have reduced the amount of time it takes to get a system back into compliance, as shown in Figure 10. Overall, improvement has been steady over the last 10 years.

Figure 10. Water Operator Compliance

Average number of days for a water system to return to compliance after receiving a violation
Assist Water Systems

MDH staff conduct site visits and provide technical assistance to public water systems across the state. This builds relationships with drinking water operators that result in extensive knowledge, trust, and a willingness to take action before they may violate safe drinking water standards.

These services are especially helpful to small, rural water systems, which have more difficulty meeting water standards. They have fewer resources for testing, investigations, and physical improvements because of their smaller customer bases.
Figure 11 shows that although Minnesota’s community public water systems have high overall compliance with the Safe Drinking Water Act and do much better than the national average, challenges remain, especially with small and very small community water systems.

**Figure 11. Number of Community Water Systems: All Violations**

*Very small systems are typically non-municipal systems, such as manufactured home parks. Small, medium, and large systems are mostly municipal systems.*

### Community Water Systems: All Violations

Very small systems are typically non-municipal systems, such as manufactured home parks. Small, medium, and large systems are mostly municipal systems.

![Graphs showing number of community water systems](image)

Source: EPA Enforcement Targeting Tool (ETT)

MDH works with a variety of partners. The Minnesota Rural Water Association is a primary partner in working with smaller water systems on training and on-site assistance. Minnesota
Rural Water Association’s mission is to provide the latest information, education, and technical assistance to protect our public waters and improve the quality of life in Minnesota.

Plan Review

Ensuring proper construction for new and renovated drinking water infrastructure is another way of preventing problems before they happen. MDH reviews plans and specifications for drinking water infrastructure projects, such as treatment plants, water mains, wells, and water towers. Plan review protects public health, avoiding possible cross connections and improper treatment of water, and helping consulting engineers and the water systems they advise comply with construction standards and ultimately the Safe Drinking Water Act. MDH engineers can also save communities hundreds of thousands of dollars each year by having corrections made in the design phase rather than having to make costly modifications during the construction phase. Figure 12 shows the plans we reviewed in 2019 broken down by type.

Figure 12. 2019 Approved Community Water System Plans

Watermain approvals have risen from 360 in 2010 to 564 in 2019. The rise is due to the need to replace aging infrastructure and new home construction.

<table>
<thead>
<tr>
<th>2019 Approved Community Water System Plans</th>
</tr>
</thead>
<tbody>
<tr>
<td>Watermain approvals have risen from 360 in 2010 to 564 in 2019. The rise is due to the need to replace aging infrastructure and new home construction.</td>
</tr>
</tbody>
</table>

![Graph showing the number of approved plans by type for 2019.](image)

Construction Inspections

We complete construction inspections at all Drinking Water Revolving Fund (DWRF) projects, with the exception of watermains. During construction inspections, MDH engineers verify that construction standards have been met to protect public health and water operator safety.
Based on the size of the project, both interim and final inspections are conducted. In 2019, we conducted ten interim inspections and 15 final inspections.

Construction inspections help the Minnesota Department of Health find deficiencies. They also provide an opportunity to talk with city staff about the project, ensure that operators get the proper training to run the project, and discuss future requirements such as asset management and an inventory of lead service lines. An example of such an inspection occurred in Pipestone in southwestern Minnesota. Pipestone became one of the first cities to consider treating its drinking water to deal with the National Pollutant Discharge Elimination System permit for chloride. It was also dealing with gross alpha emitters in their drinking water. Pipestone took a holistic approach by constructing a lime-softening plan, allowing residents to remove or reduce the usage of in-home softeners to eliminate the major source of chloride. It is also an effective removal process for gross alpha. The project was one of the first to be funded by both a Drinking Water Revolving Fund (DWRF) loan and a Point Source Implementation grant.

Pipestone was typical of most projects in that only minor items were found that needed to be addressed. It provided an opportunity for an MDH engineer to meet water system operators to talk about the project, ask any questions about current and future regulations that might affect the water system, and discuss any additional projects that might need future DWRF funding.
Test Water

MDH engineers and public health sanitarians oversee the testing of drinking water in the state, working closely with 6,724 public water systems and more than 3,800 licensed water operators.

Testing the water is a quality-control check, and each visit to collect samples provides an opportunity to interact with water system staff, where questions can be addressed and issues discussed.

While important, testing is just one part of the process of producing safe drinking water. The other sections of this report discuss areas that are just as critical.
Public Water Systems with Health-Based Violations

When a test shows that the level of a contaminant is over a federal limit, the public water system receives notice of a health-based violation. Health-based violations can occur when a public water system’s source water quality changes or when the system has a failure in operation or treatment that can affect health. Table 2 shows the number of systems that had violations in Minnesota in 2019.

When a violation occurs, MDH works with the affected water system on corrective actions. The actions always include notifying the customers of the system.

2019 Monitoring Results

**Table 2. Monitoring Results for Community and Noncommunity Water Systems**

<table>
<thead>
<tr>
<th>Contaminants</th>
<th>Number of community systems subject to monitoring</th>
<th>Number of community systems with violations</th>
<th>Percent of community systems meeting the EPA standard</th>
<th>Number of noncommunity systems subject to monitoring</th>
<th>Number of noncommunity systems with violations</th>
<th>Percent of noncommunity systems meeting the EPA standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pesticides and Industrial Contaminants</td>
<td>964</td>
<td>0</td>
<td>100%</td>
<td>488</td>
<td>0</td>
<td>100%</td>
</tr>
<tr>
<td>Bacteriological</td>
<td>964</td>
<td>0</td>
<td>100.0%</td>
<td>5,760</td>
<td>9</td>
<td>99.8%</td>
</tr>
<tr>
<td>Nitrate/Nitrite</td>
<td>964</td>
<td>3</td>
<td>99.7%</td>
<td>5,760</td>
<td>18</td>
<td>99.6%</td>
</tr>
<tr>
<td>Arsenic</td>
<td>964</td>
<td>8</td>
<td>99.2%</td>
<td>488</td>
<td>4</td>
<td>99.2%</td>
</tr>
<tr>
<td>Radionuclides</td>
<td>964</td>
<td>9</td>
<td>99.1%</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Inorganic chemicals</td>
<td>964</td>
<td>0</td>
<td>100%</td>
<td>488</td>
<td>0</td>
<td>100%</td>
</tr>
<tr>
<td>Disinfection byproducts</td>
<td>568</td>
<td>1</td>
<td>100%</td>
<td>38</td>
<td>1</td>
<td>97.4%</td>
</tr>
<tr>
<td>Lead</td>
<td>964</td>
<td>2</td>
<td>99.8%</td>
<td>488</td>
<td>3</td>
<td>99.4%</td>
</tr>
<tr>
<td>Copper</td>
<td>964</td>
<td>20²</td>
<td>97.9%</td>
<td>488</td>
<td>13</td>
<td>97.3%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>49</strong></td>
<td></td>
<td></td>
<td><strong>52</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


Systems with violations take steps to address the issue, which may include disinfecting their system, identifying and fixing the source of contamination, discontinuing the use of a well, notifying consumers, retesting, researching treatment options, installing new treatment,

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³ Some contaminants are tested at all 5,760 noncommunity water systems; others are tested only at the 488 nontransient noncommunity water systems.

⁴ Disinfection byproducts are monitored only at systems that disinfect their water.

⁵ Some aspects of Minnesota’s groundwater quality may contribute to the corrosion of copper from plumbing materials.
providing bottled water, connecting to a new water source, and conducting public education. The majority of systems that had a violation have since returned to compliance.
Address Threats

MDH works with community and noncommunity water systems to address threats posed by contaminants in drinking water. Much of the work that program staff do is to work with systems to minimize threats due to contamination and thereby avoid situations involving a violation of a water quality standard. When a public water system has a violation, MDH staff work with the system to implement actions like consumer notification and education, treatment changes, and infrastructure changes (such as drilling a new well).
Figures 13 and 14 show some of the most common contaminants that cause health-based violations in community and noncommunity water systems.

**Figure 13. Number of Community Systems with Arsenic, Nitrate, and Radionuclides Violations**

*These three contaminants are among the common causes of health-based violations at community systems.*

Source: Minnesota Drinking Water Information System (Note, 2019 numbers include carry-over violations)
Figure 14. Number of Noncommunity Systems with Nitrate and Arsenic Violations

These two contaminants are among the most common causes of health-based violations at noncommunity systems.

Lead in Water

There is no safe level of lead exposure. The main way to come in contact with lead in Minnesota is through lead-based paint in homes built before 1978. There are many other ways to come in contact with lead, including through drinking water. Lead can get into water as it passes through the home plumbing system. Water systems take steps to monitor corrosion and, when necessary, provide corrosion-control treatment to reduce lead levels in drinking water. When the chemical properties of drinking water change due to a source water or water treatment change, Minnesota Department of Health staff work with water systems to review the plans for those changes to assess if there is a risk of increased corrosion or lead levels. If there is a risk of lead levels increasing, MDH may require water systems to conduct increased monitoring, adjust treatment, provide public education, or take other actions to minimize the risk exposure to lead from drinking water.

Figures 15 and 16 show the number of community and noncommunity public water systems with results exceeding the action level for lead in the last five years. The action level for lead is 15 µg/L. An action level does not tell us about the level of lead for every customer. It tells us if we need to take more actions to control corrosion in the distribution system.
Figure 15. Number of community water systems with lead action level exceedances (ALEs)

Number of community water systems with lead action level exceedances

Source: Minnesota Drinking Water Information System

Figure 16. Number of nontransient noncommunity water systems with lead action level exceedances (ALEs)

Number of nontransient noncommunity water systems with lead action level exceedances

Source: Minnesota Drinking Water Information System
The Environmental Protection Agency recently proposed changes to the federal Lead and Copper Rule for water systems. MDH provided comments on the proposed changes and will work with EPA to implement any changes once the final rule is published. Most changes to the federal rule will not take effect until three years after the rule has been finalized.

In addition to testing the water in homes supplied by public water systems, MDH also provides a model plan that public and charter schools must use for testing for lead in school drinking water (the plan also provides guidance for childcare facilities). Public and charter schools are required to meet state testing requirements. MDH provides technical assistance to schools upon request to help them understand and interpret their results. MDH works with the Minnesota Department of Education to help schools understand the requirements for testing for lead, taking action with their results, and communicating results to their communities. MDH received a federal grant for $750,000 to develop a program to work with partners and assist schools and childcare programs with testing for lead.

**Perfluoroalkyl Substances**

Perfluoroalkyl substances (PFAS) are a family of human-made chemicals that have been widely used for decades. PFAS are emerging contaminants and have been found in the groundwater in Minnesota. MDH works with the Minnesota Pollution Control Agency (MPCA) to investigate situations where groundwater contaminants may affect public and private wells. Unfortunately, PFAS are not regulated under the SDWA, so MDH uses a variety of other tools and works with local water suppliers to reduce health risks.

MDH has been assessing the potential health impacts of PFAS in groundwater in Minnesota since 2002. MDH and MPCA have a long history of working with people in the suburbs east of the Twin Cities (East Metro) to protect them from the health effects of PFAS in their groundwater. MDH began sampling public water systems for PFAS in 2006. Much of this sampling has taken place in the East Metro and in other areas of the state where aqueous film-forming foam (AFFF) was used, such as airports and military bases. MDH has also conducted PFAS monitoring through several activities, including the EPA’s Third Unregulated Contaminant Monitoring Rule and the Unregulated Contaminant Monitoring Project.

MDH has taken a strategic approach to PFAS monitoring in drinking water. This approach focuses on addressing potential public health risks near sites known to have nearby sources or disposal of PFAS, understanding how PFAS moves through the environment, and characterizing drinking water vulnerability to PFAS. MDH is using past monitoring results and current scientific evidence to inform this monitoring approach. This approach allows MDH to maximize its resources, target areas with potential health risk, and protect public health.

**DWP Response to a Growing Threat: *Legionella* Bacteria**

*Legionella* is a bacterium commonly found in natural and human-made aquatic environments. *Legionella* can be found at low concentrations in any public water system. *Legionella* poses a health risk only when growth occurs in warm, stagnant water, the water is aerosolized, and the small droplets are inhaled. *Legionella* generally does not pose a health risk if a person drinks the
water. People who become infected may develop legionellosis, a type of pneumonia also called Legionnaires’ disease, or a flu-like illness called Pontiac fever. There has recently been an increase in Legionnaires’ disease cases nationwide and in Minnesota. Prior to 2016, there were never more than 60 cases reported annually. In 2018, there were 152 confirmed cases, with 17 confirmed cases in 2004 and 115 cases in 2016.

*Legionella* can be found in a single case or as part of an outbreak, which is when there are two or more confirmed cases in a facility or localized area. Each reported case is reviewed by the MDH Infectious Disease Epidemiology Prevention and Control (IDEPC) program to determine if it may be linked to a public water system. If such a connection is possible, the MDH Drinking Water Protection (DWP) program coordinates with IDEPC on a response and investigation. *Legionella* is considered to be in all water systems, so random sampling does not typically add useful information to the investigation. Instead, DWP staff work with the water system to gather relevant information about the distribution, treatment, operation, and maintenance of the system. The information may include chlorine residuals, general chemistry parameters, and possibly the presence or absence of coliform bacteria and *Legionella*. Sampling of the distribution system may be implemented if it is determined to be useful in narrowing the source of the outbreak. On-site investigations, if they take place, may include a review of operations records, which would cover any disruptions in treatment or the distribution systems, such as drops in water pressure or watermain breaks. Depending on the results of the investigation, the system may be required to perform public notification to its customers.

In 2018 and 2019, DWP partnered with IDEPC on two public outbreak investigations each year. DWP’s role is to work with community water systems for the affected area to help them gather and document water quality data, and to provide technical assistance to determine the outbreak source.

DWP staff has also worked with the Association of Drinking Water Administrators to develop guidance for states on how to regulate facilities that install secondary treatment, such as chemical addition – including chlorine, chloramines, chlorine dioxide or ozone – for pathogen control. Facilities affected by this guidance will be regulated as a consecutive public water system and could hospitals, nursing homes, extended-care facilities, and buildings with complex plumbing systems.

**MDH Works with Communities to Address Manganese Issues**

Manganese is a naturally occurring contaminant often found in ground water and surface water in Minnesota. It causes discolored water that many people find unpleasant. Many Minnesota water systems have installed treatment to remove manganese as well as iron, another naturally occurring substance in rocks and soil that can cause discoloration. At elevated levels, manganese can cause health concerns, too. Children and adults who drink water with high levels of manganese for a long time may develop problems with memory, attention, and motor skills. Infants under one year old may develop learning and behavior problems if they drink water with too much manganese in it.

MDH has developed health-based guidance values for manganese in water. It determined that a safe level of manganese in water is under 100 micrograms per liter (µg/L) for infants who...
drink tap water or formula made with tap water. For others, a safe level of manganese in water is under 300 µg/L.

Unlike maximum contaminant levels, these guidance values are not enforceable by law. Nevertheless, a number of public water systems have been testing for manganese. Based on test results and treatment practices, MDH estimates about 90% of Minnesotans using community drinking water systems receive water with levels of manganese under 100 µg/L. About 97% receive water with levels under 300 µg/L.

Some systems that have water above these levels have held public meetings to inform residents about the situation and its implications. MDH has participated with these communities to provide information about health effects and what people can do to reduce their exposure. The meetings have been open to residents who get their water from the city as well as people who have private wells. Private well owners have been advised to test their water to determine if manganese is a concern.
Fund Projects

Source Water Protection Grants

MDH has awarded more than 800 grants statewide under the Source Water Protection (SWP) grant program. Its purpose is to protect the drinking water source from contamination, with a focus on prevention.
The SWP grant program started two years after the 2008 passage of the Clean Water, Land and Legacy Amendment to the state constitution. This Legacy Amendment includes protecting drinking water sources and funding grants. The annual number of awarded grants has grown from 11 to more than 100. Since the grants program started, MDH has awarded over $5.3 million. In 2019, 99 grants were awarded, for a total of $825,000.

Figure 17 shows the numbers of grant activity categories and how they have fluctuated over time.

**Figure 17. Source Water Protection grant activities**

*SWP grants fund diverse activities that protect drinking water. Activities range from well sealing to public education to managing and eliminating potential sources of contamination in Drinking Water Supply Management Areas (DWSMAs).*

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<table>
<thead>
<tr>
<th>Source Water Protection grant activities</th>
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</thead>
<tbody>
<tr>
<td>SWP grants fund diverse activities that protect drinking water. Activities range from well sealing, to public education, to managing and eliminating potential sources of contamination in DWSMAs.</td>
</tr>
</tbody>
</table>

The grants have led to a number of unique projects:

- Planting of native vegetation in Perham’s storm water basin, upgradient of the Emergency Response Area.
- Perham website design to gather information for irrigators in DWSMAs to make irrigation scheduling decisions that decrease fertilizer application and potential leaching events.
- Cost-share programs to implement Nitrogen Best Management Practices and plant cover crops or perennial vegetation to reduce nitrate in public water supply wells, including in Perham, Rock County Rural Water, Red Rock Rural Water, Edgerton, Cold Spring, and Adrian.
- City of Backus purchasing highly vulnerable land within their Emergency Response Area.
- Sealing of more than 1,100 wells and funding of well sealing cost-share programs.
- Construction of more than 20 public water supply wells.
Gravel and mining pit reclamations, including St. Martin and Red Rock Rural Water.

Development of emergency response and spill response plans, including Annandale and Glenwood.

Stream restoration and slope protection projects, including St Paul.

Underground and leaking storage tank removals, including Calumet, Keewatin, and Bovey.

2019 Success Stories

Joint underground storage tank (UST) removal by the cities of Calumet, Bovey, and Keewatin

Itasca County was the manager of three tax-forfeited parcels with underground storage tanks. The project was coordinated with the Itasca County Real Estate Specialist, Itasca County Administrator, and the Itasca County Board.

The underground storage tanks were located on parcels within Bovey, Calumet, and Keewatin vulnerable DWSMAs. Each of their wellhead protection plans included strategies to address USTs.

The city of Bovey was awarded a $10,000 implementation grant in 2018 (fiscal year 2019) to remove three USTs at the former Spur Gas Station, which had been inactive for approximately 10 years. The city passed a resolution to support the work, and the removal of the tanks led to protection of their drinking water as well as to providing future business opportunities and additional revenue to the city’s tax base. The total project cost was around $14,300.

The cities of Calumet and Keewatin were each awarded a $10,000 implementation grant in 2019 (fiscal year 2019) to remove three tanks. The total project costs were approximately $16,500, and $13,000, respectively.

All tank removal projects were completed in 2019. There were many benefits to removing these tanks, including placing parcel management responsibility with each PWS and improving local, county, and state working relationships. Calumet and Bovey were the 2020 finalists for the Small Systems Source Water Protection Awards at the Minnesota Rural Water Association conference.
There are three categories of SWP grants. The transient and competitive project activities are similar from year to year. Plan implementation grants support activities specifically identified in a system’s Source Water Protection Plan. The demand for these grants is growing and exceeds the available funding, as shown in Figure 18.

**Figure 18. The Demand for Source Water Protection Grants Exceeds Available Dollars**

As project funds become available, waitlisted projects can be funded.

The demand for Source Water Protection grants exceeds available dollars. As project funds become available, waitlisted projects can be funded.

![Graph showing the demand for source water protection grants](image)

Note: Data represents fiscal years.

SWP grant applications are accepted each spring and fall. For more information, including a list of previous grant awards with project activities, visit [Source Water Protection Grants](https://www.health.state.mn.us/communities/environment/water/swp/grants.html).

**Drinking Water Revolving Fund**

The Drinking Water Revolving Fund provides below-market-rate loans to public water systems for capital improvements needed to achieve or maintain compliance with the federal Safe Drinking Water Act.

**KEY STATISTICS**

Since 1998, Minnesota has funded 568 projects totaling approximately $1 billion.

In fiscal year 2019:

- $77.2 million funded 40 projects, with $4.7 million in principal forgiveness.
- These 40 projects consisted of five new treatment plants, seven treatment plant upgrades, four storage projects, several new wells with associated wellhouses, six storage tanks, two meter upgrades, and 17 watermain projects.
Bottle-Filling Stations

The MDH Drinking Water Protection Section and MDH Oral Health Program, in a cooperative agreement with the Centers for Disease Control, administer federal grant funds to reimburse eligible organizations for costs to purchase new drinking fountains with water bottle filling stations (hydration stations).

MDH awarded grants to the following communities and organizations to install drinking fountains with bottle-filling stations:

- St. Charles Elementary School
- Dover-Eyota Elementary School
- Dover-Eyota High School
- International Falls High School
- Stewartville-Bonner Elementary School
- Arrowhead Economic Opportunity – Grand Rapids Service Center

The fountains provide an alternative to bottled water, retain fluoride from the water supply, and promote healthy behaviors by providing an alternative to sugar-sweetened beverages. Though none of the awardees had been found to have high levels of lead in their drinking water, the filling stations also protect people from exposure to lead in older water fountains.

Clean Water Fund Success Story: Randall Gets Award from the Environmental Protection Agency

The city of Randall received a U.S. Environmental Protection Agency Aquarius award for exceptional focus on sustainability and protection of public health. The award is part of the Drinking Water State Revolving Fund (DWSFR), a $38 billion federal-state partnership dedicated to maintaining compliance with the federal Safe Drinking Water Act through grants and below-market-rate loans.

Randall, a city of 650 in central Minnesota, received the award for its construction of a new 125-gallon-per-minute water treatment plant designed to remove iron, manganese, and arsenic as well as for the construction of a new well with a lower nitrate concentration.
Since the early 2000s, the nitrate concentration in one of the two Randall wells had continued to increase. In February of 2015, Well No. 1 exceeded the maximum contaminant level (MCL) for nitrate and was taken off-line, leaving only one remaining well. To assure a reliable water supply for its residents, in May 2015 Randall applied for funding through the DWSRF. The proposed project was to drill a low-nitrate well to replace Well No. 1. A location for the well was found, but the analysis of the water from the test well showed higher concentrations of arsenic, iron, and manganese. The project was modified to include a treatment plant designed to remove those contaminants. Treatment for arsenic, iron, and manganese was more cost effective than treating for nitrate, and it provided better overall water quality to the customers.

“The project demonstrated leadership in both affordability and innovative financing,” said Chad Kolstad of the Minnesota Department of Health, the administrator for the revolving fund in the state. The new plant went on-line in 2018 and, according to Kolstad, “Recent sample results for arsenic and nitrate leaving the treatment plant in Randall are below detection limits, and the city has been returned to compliance.”

More information: [Drinking Water State Revolving Fund AQUARIUS Recognition Program](https://www.epa.gov/dwsrf/drinking-water-state-revolving-fund-aquarius-recognition-program)

**Drinking Water Infrastructure Grant Funding Increase**

As a result of the changes in legislation to two key grant programs in Minnesota in 2017 (the Water Infrastructure Fund (WIF) and Point Source Implementation Grant (PSIG)), the grant funding for drinking water projects has increased over the last several years. Funding totaled $17.5 million in fiscal year 2019. WIF provides grant funding based on an affordability threshold, allowing needed and costly drinking water infrastructure projects to be completed. PSIG is a grant program designed to help communities address limits placed on wastewater discharges and assist PWSs. Both of these programs, when linked to the Drinking Water Revolving Fund, have put many needed drinking water infrastructure projects in reach for communities across Minnesota.

**Infrastructure Repair and Maintenance Funding**

Maintaining and replacing critical infrastructure – water treatment plants, wells, and pipes – will continue to be a priority. EPA estimates that Minnesota must invest approximately $7.5 billion over the next 20 years to upgrade community public water systems to comply with the Safe Drinking Water Act. The breakdown of our funding needs is shown in Figure 17.
Figure 19. Drinking Water Infrastructure Needs for Minnesota in the Next 20 Years

Our total need is $7.5 billion

Though available grant dollars increased over the last few years, grant dollars still do not cover total project costs, so systems have to find other funding mechanisms for projects, such as Drinking Water Revolving Fund (DWRF) loans. Figure 18 shows the difference between project costs and available grant dollars for projects receiving both a DWRF loan and associated state and federal grants.
Figure 20. Grant Dollars and Total Costs for Drinking Water Infrastructure

Grant dollars are small in comparison to total project costs.

Grant Dollars and Total Cost for Drinking Water Infrastructure

Grant dollars are small in comparison to total project costs.
Conclusion

Minnesota’s public water systems continue to provide drinking water that meets the federal drinking water standards of the Safe Drinking Water Act. MDH notifies the public when there are contamination events to help them avoid risks to their health. Preventing contamination remains a top priority for MDH and for public water systems.

Dealing with drinking water contaminants that are not regulated as part of the Safe Drinking Water Act is a challenge faced by more and more public water systems. Communicating about risk and financing solutions to contamination are part of that challenge.

The EPA infrastructure needs assessment process and demand for infrastructure loans demonstrate ongoing need for investment in drinking water treatment plants and distribution systems. These are critical infrastructure, as a safe drinking water supply is fundamental to healthy and prosperous citizens, communities, and businesses. Disparities in residents’ costs for drinking water is an increasing concern, especially in some of Greater Minnesota’s smaller towns, where rates for drinking water can be more than twice as high as in other communities.

Efforts to protect sources of drinking water continue to move forward, and associated implementation activities vary from managing known and potential sources of contamination to various forms of long-term land use protection, including easements. Most of this work has traditionally favored groundwater sources of drinking water, but new program resources are being directed to surface water sources of drinking water.

In 2019, MDH’s drinking water program worked to protect drinking water through multiple approaches, with multiple partners, to assure public health protection for all Minnesotans. We look forward to continuing this mission in 2020 and beyond.

FOR MORE INFORMATION

A report that lists all violations of the Safe Drinking Water Act in Minnesota for calendar year 2019 is available from the Drinking Water Protection Section, Minnesota Department of Health, Box 64975, St. Paul, MN 55164-0975, 651-201-4700, health.drinkingwater@state.mn.us.

Individual water systems produce an annual report, known as a Consumer Confidence Report, listing contaminants that were detected, even in trace amounts, during the previous calendar year. Please contact the individual water system if you would like a copy of this report, or visit Search for Your Consumer Confidence Report (https://mnccr.web.health.state.mn.us/index.faces).
Partners

We acknowledge the many citizens, professionals, organizations, and agencies that work to protect and restore our water resources and provide safe drinking water to people in Minnesota. Some areas in Minnesota have aquifers so pristine that they require no treatment to provide safe drinking water. However, our groundwater and surface waters can be contaminated both by natural processes and by our human activities, and demand for water keeps increasing across Minnesota. It is because of the work of these people, as individuals and as members of businesses, organizations, and government agencies, that anywhere in Minnesota, citizens can feel confident that the drinking water provided by public water systems meets all federal drinking water standards.

OUR THANKS TO:

- Minnesota Rural Water Association
- Water Bar
- American Water Works Association and its Minnesota Section
- Local government staff including counties, townships, and municipalities
- Nonmunicipal public water system staff and operators
- Landowners
- Business and industry owners
- Food, beverage, and lodging facilities owners and staff
- Manufactured housing development operators
- Schools and churches
- Treatment and correctional facilities
- Board of Water and Soil Resources
- Minnesota Pollution Control Agency
- Minnesota Department of Natural Resources
- Minnesota Department of Agriculture
- Metropolitan Council
- Environmental Quality Board
- Clean Water Council
- Public Facilities Authority
- Elkay
- H2O for Life
- U.S. and Minnesota Geological Survey
Minnesota Ground Water Association
Minnesota Water Well Association
Suburban Utility Superintendents Association
Water Resource Programs at Vermilion Community College, St. Cloud Technical and Community College, St. Paul College, and the University of Minnesota
Association of State Drinking Water Administrators
U.S. Environmental Protection Agency

Safe drinking water is everyone’s job.

Notes on Data

Data from EPA and MDH may have slight discrepancies because of the following factors:

- There may be a lag in data transfer from MDH to EPA databases.
- Some data are reported based on the calendar year, with other data reported based on the state or federal fiscal year.
- Data may represent a point in time or a range of time.
- Dates when data are accessed may vary.
- Manual entry of data may not coincide with when data are accessed for reports.