Spring 2020

RURAL MATTERS

The magazine of the Rural Community Assistance Partnership

RCAP Partners Build Drinking Water Capacity in Communities Across the Country

Perseverance Pays off for Missouri Community Drinking Water Project

Oglala Sioux Tribe Drinking Water Project Seeks to Upgrade Systems in 18 Communities

Water Operators and City Officials Recognized for Heroism Shown Throughout COVID-19 Crisis

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Features

Letter From the CEO

Nathan Ohle
RCAP CEO

This month's issue of Rural Matters comes at a very important time in our history. With the ongoing COVID-19 pandemic, the water sector is even more important than ever. Basic health guidelines in times of crisis always revolved around hand washing, and without access to water and wastewater disposal, communities are susceptible to further spread of disease. Water systems across the country have halted water shut offs and are providing water access even in the face of rapidly declining revenues due to the economic downturn, which is affecting businesses and families in communities of all sizes. The RCAP Network knows all too well the capacity and financial issues confronting small rural and tribal water and wastewater systems, and so for this month's issue of Rural Matters, we are celebrating and lifting up the importance of safe drinking water and the operators that are the backbone of water systems.

In the face of a crisis like this, we are reminded of all that makes the RCAP Network special. What makes rural communities so special. Over the past month, RCAP technical assistance providers and rural and tribal leaders have stepped up and risen to the challenge that the COVID-19 pandemic has brought to the doorsteps of thousands of communities across the country. Rural and tribal communities rally together in situations like this, and leaders emerge from previously unassuming positions. Nowhere is that more true than in the water sector. Water operators continue to serve their communities even in the face of incredible challenges and are providing access to safe drinking water even as resources are constrained and communities are limited in their ability to respond.

The RCAP Network serves some of the smallest, yet most resilient, communities across the country. The knowledge the Network shares, the connections made, and most of the all, the support provided to communities in need is incredible. The Rural Community Assistance PARTNERSHIP is built on our relationships and partnerships with communities in every state and territory. Over the coming months, this work will be needed even more, and the stories of community leaders stepping up will continue to inspire us all.

This month's Rural Matters will continue to tell the story of the importance of the water sector and the leaders that make it so special. The stories you will read are just a few of the thousands that are out there, and I want to encourage you to share your own stories, or those of your community, with us. Thank you for all you are doing to keep communities safe and healthy, and for helping us shine a light on the incredible work happening in small communities across the country.

Nathan Ohle
RCAP CEO

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LOR

Congress Working on Water Policy Priorities despite Current Heath Crisis

Ted Stiger
Senior Director of Government Affairs & Policy

The COVID-19 pandemic has dominated much of the activity on Capitol Hill these past few months and for good reasons, but Congress continues to forge ahead on important water policy issues as well.

In April, the U.S. Senate Environment and Public Works Committee (EPW), which handles the Safe Drinking Water Act and Clean Water Act programs for the upper chamber, released two new draft pieces of legislation: "America's Water Infrastructure Act of 2020" and "America's Drinking Water Infrastructure Act of 2020" aimed at improving our nation's drinking water and wastewater infrastructure. The package also authorizes port and waterway projects over two years through the U.S. Army Corps of Engineers.

Additionally, the legislation reauthorizes the U.S. Environmental Protection Agency's (EPA) National Priority Area (NPA) technical assistance (TA) program for small and rural/small water systems, which includes an emergency funding authorization of $35 million for 2021 through 2024. The legislation also opens several program EPA programs to non-profits to do much-needed technical assistance, reauthorizes the 2 percent TA set-aside under the Drinking Water State Revolving Fund, and creates a program at EPA to allow non-profits to help low-income homeowners upgrade or refurbish decentralized wastewater systems.

Senate EPW conducted a hearing on the draft bills and will be making any changes/edits to the legislation in the coming weeks. The committee will plan to advance these bills out of committee to the Senate floor in the coming months.

Also, earlier this year, the U.S. House of Representatives advanced the "PFAS Action Act of 2020-H.R. 535" by a vote of 247 to 159. PFAS refers to perfluorooctanoic acid. The legislation addresses toxic "forever chemicals" and would require EPA to use tools under several different environmental statutes to:

- Limit human exposure to PFAS by requiring a drinking water standard for PFAS that protects public health, including the health of vulnerable subpopulations like pregnant women, infants and children, and holding polluters accountable. The legislation also provides grants to impacted water systems, creates a voluntary label for cookware that is PFAS free, and provides guidance for first responders to limit their exposures

- Stem the flow of PFAS contamination into the environment by requiring cleanup of sites contaminated with PFOA and PFOS, setting air emission limits, prohibiting unsafe incineration of PFAS, and limiting the introduction of new PFAS chemicals into commerce

- Identify health risks by requiring comprehensive health testing for all PFAS, reporting of PFAS releases, and monitoring for PFAS in drinking water.

The recently released Senate bill does not include many of the provisions found in the House approved PFAS Action Act, however, the Senate bill includes $300 million for water systems to do remediation of these forever chemicals. It is likely negotiations between the House and Senate on water policy issues will continue for the remainder of the year, but water continues to remain a top Congressional priority amidst the COVID-19 pandemic.

Feature Article

SMALL COMMUNITY LEADERSHIP:

A Spotlight on Water Industry Heroes

By Kinsey Brown,
RCAP Communications Manager

As we publish this issue, communities across the country are struggling in the wake of COVID-19, the impacts of the disease hitting all sectors and industries. While many urban areas emerged as early areas of concern, rural, small, and tribal communities face a unique challenge. Many small water and wastewater systems across the country have very few employees, and do not have a surplus of supplies, resources or capacity. Some communities were just beginning to recover from recent natural disasters and now must chart paths forward under further stress and uncertainty.

However, in these trying times, the RCAP Network is seeing bright spots and remarkable individuals. The RCAP Network works directly with rural communities across the United States, in Puerto Rico, and the U.S. Virgin Islands, and many rural community leaders and water operators have stepped up to the plate. Below we highlight a few of these community heroes. Many more water industry heroes are protecting public health, but with these stories, we hope to shine a light during these difficult times for our communities and citizens.

Water Industry Hero Spotlight

Lewis "Chip" West is a seasoned water industry veteran. He has been the **Chief Operator for the City of Fairmont, West Virginia,** for the past 16 years. Fairmont produces approximately six million gallons of water per day for its own use and sells water wholesale to 20 public water systems in surrounding communities. Great Lakes Community Action Partnership (GLCAP), the Great Lakes RCAP, has provided technical assistance to Fairmont and many of its surrounding systems as well. West has a long-term commitment to the viability of West Virginia water systems. Understanding the depth of the challenges facing these water utilities, West has made it his personal mission to engage the region's systems, tirelessly promoting the importance of safe, clean drinking water at every opportunity. After many area systems were out of compliance with the Safe Drinking Water Act (SDWA), West initiated quarterly meetings to discuss treatment changes. With his dedication, all the systems are now in compliance and constant communication with one another.

In March 2020, at the beginning of the COVID-19 crisis, West created a Pandemic Preparedness Plan and distributed it to the surrounding systems. He also agreed to share the plan with RCAP, so that it could help other small systems across the country. West has also been providing neighboring communities and their systems with cleaning supplies, hand sanitizer and available staff if they need any additional resources or assistance. West is providing this essential, life-sustaining service to his community and for that, he is a hero.

Water Industry Hero Spotlight

Brooksville, Kentucky, home to the Bracken County Water District (BCWD), lost members of their field staff just as the COVID-19 crisis began. Their already limited resources took a tough blow, and the district now relies on **one sole operator, Michael Brothers.** Brothers has been working long hours reading meters, meeting sampling and other requirements, addressing water emergencies, and ensuring that the water district is able to continue to provide safe, potable water to citizens. Brothers is providing this essential, life-sustaining service to his community and for that, he is a hero.

Water Industry Hero Spotlight

The **City of Cloverport, Kentucky** is a small town located on the Ohio River. With a small workforce and limited supplies and equipment, the town is facing hardship. The four paid employees are handling a larger workload. Three of the employees are pulled away for duties three days a week to collect the city's trash, leaving **Eddie Lee, Public Works Director**, to carry the workload during that time. His tasks include fixing water leaks, collecting compliance samples for both water and wastewater, reading meters, running the wastewater plant, mowing, weed eating, and any other day-to-day activities needed around the city.

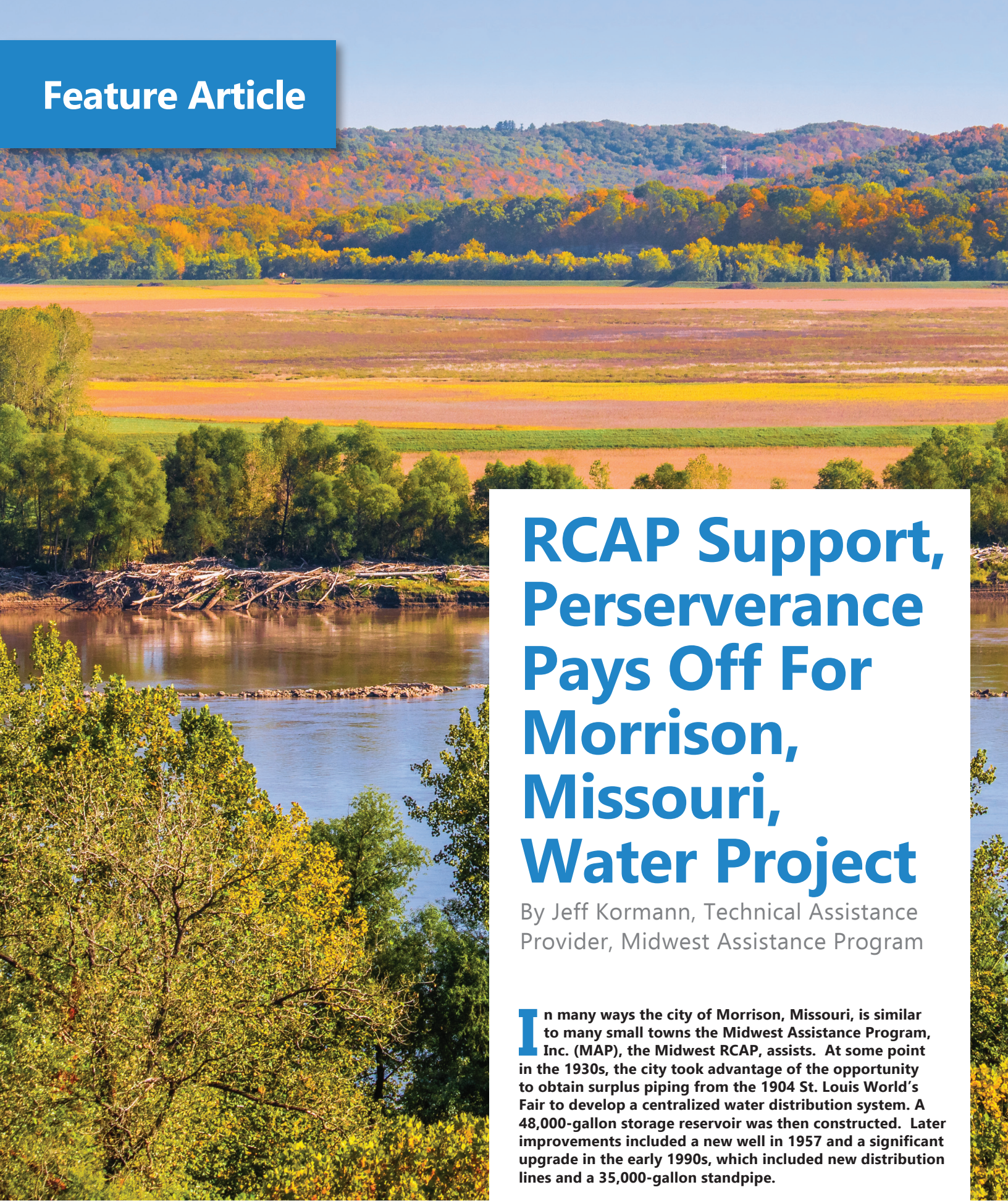
In September 2019, Lee suffered a major heart attack. He was back on the job shortly thereafter. Lee has obtained multiple licenses to bring skills into the community and move the city away from using a contract operator. In his spare time, he has been taking online courses to move toward the next level of licensure in drinking water distribution. Lee is often the first to work in the morning and the last to leave in the evening. He works hard to maintain the city's water, wastewater and general needs, while practicing social distancing during COVID-19. Lee is providing this essential, life-sustaining service to his community and for that, he is a hero.

Water Industry Hero Spotlight

In **Blountstown, Florida**, the community is still recovering from destruction left by Hurricane Michael. Local, family-owned businesses are a backbone of the Blountstown economy, and many impacted by the hurricane have had to shutter their doors yet again. **City Manager Traci Hall** said that **the Council** recently voted to suspend all water disconnections to help those unable to pay their utility bills. "This type of situation changes daily. It is something new to all of us. We have never been through anything like this before. We're trying to make sure we're meeting the needs of everyone and trying to look at the whole picture," Hall said. She also noted that the Council is working with state and federal officials to provide resources for business owners and employees to help them find funding, supplies and other ways to survive during this crisis.

From city leaders like those in Blountstown who have prioritized their citizens' right to access drinking water, to individuals across the country who go the extra mile – sometimes to the neighboring towns – to ensure the safety of rural drinking water: We salute your heroism. Thank you for your service on a front line during this crisis.

Feature Article



RCAP Support, Perserverance Pays Off For Morrison, Missouri, Water Project

By Jeff Kormann, Technical Assistance Provider, Midwest Assistance Program

In many ways the city of Morrison, Missouri, is similar to many small towns the Midwest Assistance Program, Inc. (MAP), the Midwest RCAP, assists. At some point in the 1930s, the city took advantage of the opportunity to obtain surplus piping from the 1904 St. Louis World's Fair to develop a centralized water distribution system. A 48,000-gallon storage reservoir was then constructed. Later improvements included a new well in 1957 and a significant upgrade in the early 1990s, which included new distribution lines and a 35,000-gallon standpipe.

Morrison water operator Delmar Mitchem (at left) discusses the condition of the existing wellhouse with representatives of the engineering firm and construction contractor.
Photo Credit: Jeff Kormann

Mayor Same Birk (third from left) speaks with the team put together to design and build the system improvements.
Photo Credit: Jeff Kormann

Fast forward to 2011, and a time when the wheels seemed to be coming off the wagon for Morrison's drinking water system. The storage reservoir was showing its age and triggering sampling violations by allowing rainwater to flow directly into the distribution system. The reservoir was only one of a number of substandard system components, including the adjacent well house and an improperly abandoned well. This prompted the Missouri Department of Natural Resources (MO DNR) to issue an Administrative Order of Consent (AOC) and establish a schedule for addressing several items of deficiency. To help the community address these challenges, MO DNR funded a preliminary engineering report that carried what the Board of Aldermen felt was an excessively steep price tag. The city chose the route of addressing the action items in the AOC one by one as local resources permitted, a strategy that eventually triggered the imposition of a fine, which was paid in accordance with MO DNR requirements.

Eventually, the town whittled the list down to the most costly and contentious item: DNR's requirement to renovate, replace, or retire the more than 80-year-old reservoir. Finding no stand-alone grant funding, and with the scope of work considered too small for either USDA-Rural Development or the State Drinking Water Revolving Loan programs, the Board found itself in a position of having to "pick its poison" from among several unappealing options. One of the options included mortgaging their handsome city park, to avoid additional financial penalties or other legal actions being taken by the primacy agency.

Enter Midwest Assistance Program (MAP), and the resources of the Rural Community Assistance Partnership (RCAP) Network into the equation. Based on information from an area contractor to re-line the tank and replace the current lid with a concrete cover, MAP Technical Assistance Provider (TAP) Jeff Kormann was able to submit a successful application to Communities Unlimited (CU), the Southern RCAP, for a $95,000 low-interest loan leveraged by slightly over $16,000 in available local cash. CU is a Community development financial institution (CDFI) and can provide lending to small communities. MAP then produced a rate study which projected the city would need to increase water rates by nearly 30 percent in order to make monthly payments against the 15-year term and accumulate some cash reserve for short-lived asset replacement. The Board agreed that this increase, while no doubt painful for the many local customers who were elderly or on fixed

One RCAP region partnered with another to ensure this community could receive low-interest loan funding that proved integral to this community ultimately having safe drinking water.

Morrison's old wellhouse could certainly meet the definition of "substandard" both inside and out.
Photo Credit: Jeff Kormann

incomes, was still significantly less than what would have likely been required by public funders.

In 2016, the town signed contracts with the general contractor and a local firm for final engineering design and construction inspection services. When delays did occur, Kormann drafted a letter for the city to submit to MO DNR through which they were granted a time extension for completion of the work.

In spring 2018, just before the end of the extension period, the municipal elections produced a surprise. Mayor Sam Birk, who had served in that capacity for 40 of the previous 42 years, declined to retain office based on write-in votes, leaving the city without a mayor for nearly six months. Along with that, the city clerk stepped down, citing job responsibilities, and turnover on the Board deprived the project of its major advocates. The contractor, citing prior scheduling commitments, did not begin work when expected and the entire construction season was lost. At this point the project appeared to be in serious jeopardy, and MO DNR's patience was put to the test.

The condition of the cracked, patched lid covering the 80-year-old chlorine detention reservoir can be clearly seen here.

This is where perseverance came in. Although not authorized to speak directly for the city with MO DNR Enforcement, Kormann remained in contact with their staff while the utility board president was able to obtain another extension to June 2019 without additional fines. Just as the contractor was preparing to mobilize in November 2018, early wintry weather intervened, and the project was once again delayed.

As spring arrived, the contractor began pouring concrete to create a new liner and roof for the reservoir. Additional work, including replacement of the dilapidated wellhouse, contributed to a cost overrun, but by late June 2019, the work was substantially completed. Once final cleanup and punch-list items were completed, MO DNR and the city were able to formally close the books on this very interesting and challenging project.

Today the 139 citizens of Morrison – that unique little community located in both the hills and valleys of Central Missouri – enjoy the benefits of the world's most important resource: safe drinking water.

Feature Article

A class of operators hears a briefing to prepare for hands-on group breakout sessions.
Photo credit: Wesley Hoem

Photo credit: Wesley Hoem

Learning lab participants representing rural communities conduct chlorine analysis.
Photo credit: Wesley Hoem

Learning Lab Improves Engagement and Knowledge Retention

By Wesley Hoem, Technical Assistance Provider, Great Lakes Community Action Partnership

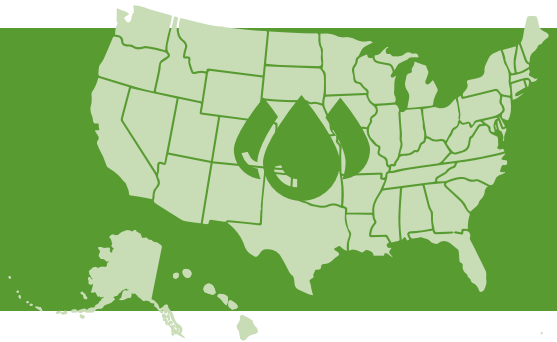
The Rural Community Assistance Partnership (RCAP) and the American Water Works Association (AWWA) have partnered to create a program funded through the U.S. Environmental Protection Agency (EPA) that presents full-day interactive water operator trainings. RCAP and AWWA have developed an extensive toolbox of training courses for water operators to attend and improve compliance with the Safe Drinking Water Act. Through this partnership, 18 compliance-related in-person curricula have been developed and are being used across the country. AWWA and RCAP are working to bring some of these trainings online due to remote learning needs brought about by COVID-19, and they are also working to develop new self-paced e-learning modules.

Operator training has become a significant function of RCAP's many programs to support local technical, managerial and financial capacity building for small, rural and tribal water and wastewater systems. Some of the major hurdles of producing operator training are the ability to keep things fresh, offer a variety of topics, and provide professional-level delivery of the material. Although lectures and Power Points have been the major delivery method for several years or even decades, that is not the most effective way for professionals to learn and retain this important information. Our audiences of operators are used to constantly moving during their workday, inside and out of the plant, from one location to another. Learners in this industry, rightfully so, find it challenging to sit in a chair all day during training and soak up all the information being presented, especially if it is in lecture form. So the question becomes: How do we keep these operators engaged throughout the day?

Enter the Water Learning Lab. This training was designed to be interactive and engage learners in water quality monitoring. It helps build their skills so that in their jobs they can ensure water flowing from their system is safe to drink. The topics covered in this lab include:

1. Total coliform sample collection;
2. Chlorine residual sample collection – and measurement; and
3. Chlorine residual mapping.

The Learning Lab minimizes presentations. Participants engage in activities designed to give them the skills necessary to use these techniques when they return to their jobs.



Under RCAP's 2017 to 2019 drinking water compliance program, funded by U.S. EPA, RCAP and AWWA provided 54 joint all-day trainings to an estimated 1,245 participants in all 50 states and Puerto Rico.

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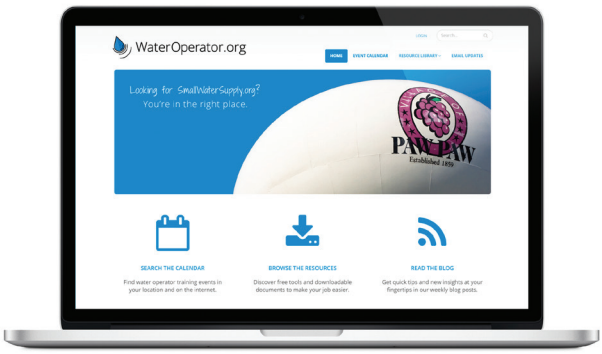

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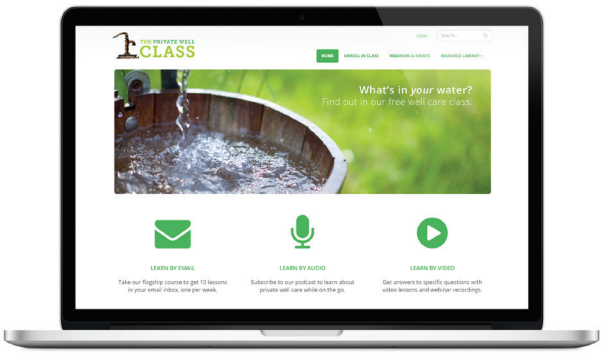

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WaterOperator.org and PrivateWellClass.org are collaborations between the Rural Community Assistance Partnership and the University of Illinois, through the Illinois State Water Survey at the Prairie Research Institute, and funded by the U. S. Environmental Protection Agency.

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Feature Article

SEVEN YEARS FOR SEVEN GENERATIONS:

A Multi-Phase Project Aims to Provide Lasting Improvements for the Oglala Sioux Tribe

By RJ Inskeep, Technical Assistance Provider, Midwest Assistance Program

The "Seven Years for Seven Generations" drinking water project seeks to upgrade and replace water distribution system components in up to 18 communities spanning the 3,468 square miles of the Pine Ridge Indian Reservation in South Dakota. The $32 million project has required multiple years of effort and technical assistance due to its complexity, size, and cost as well as the multiple communities, agencies/entities and individuals involved.

To advance the project, tribal officials have been coordinating with federal agencies in Washington, D.C., as well as at the regional and local level since 2010. In order to start the project, the Mni Wiconi (Lakota for *"Water is Life"*) Rural Water Supply Project sponsors began testifying in front of Congress and travelling annually to Washington, D.C., to raise the imperative for improving rural water infrastructure.

Most, if not all, of the systems in the "Seven Years for Seven Generations" project were originally installed in the 1960s, more than 50 years ago. They need significant attention. Several challenges await planners, technical assistance providers, engineers, and contractors. The overall project plan is to upgrade the existing community drinking water systems and transfer them into the Mni Wiconi Project, as contemplated by the Mni Wiconi Project Act of 1988. The outcome of the initiative is to provide adequate, safe and reliable drinking water to children and adults living in and working on the Reservation.

The goals of "Seven Years for Seven Generations" project are to:

1. Upgrade all community drinking water systems,

2. Remediate health, safety, and maintenance issues,

3. Bring community water systems up to the standards the U.S. Bureau of Reclamation (BOR) requires for transfer in trust,

4. Obtain funding for all the project communities, and

5. Fulfill the Mni Wiconi law for BOR to provide maintenance and operations funds to the Oglala Sioux Tribe for the main distribution system, treatment system(s) and community drinking water systems.

When the communities are upgraded to BOR standards and transferred over, the Bureau would then assist with funds for maintenance, upgrade, and repair in communities across the reservation. After the transfer to BOR, all the community systems will be operated and maintained by the Oglala Sioux Tribe Department of Water Development, Maintenance and Conservation (OSTWDM&C). Currently, the various community systems are operated and maintained by multiple Tribal entities. This project will allow for one Tribal entity (OSTWDM&C) to operate and maintain all the community drinking water systems on the Reservation.

During a conversation about the [illegible]ect with OSTWDM&C Director Chuck Jacobs, he said, "[illegible]gnificant effort has taken place by all involved parties to get the project going and begin to obtain funding for the project, as well as coordination amongst involved parties to continue to keep the project moving forward."

Continued on Page 16

PROJECT PHASES

To finance the project, organizers broke the project down into phases, in this case referred to as levels. These smaller portions make financing more feasible and allow for easements to be obtained on an ongoing basis. Below you will find a list of project levels, estimated project timelines, proposed funding and project status.

LEVEL I

Oglala North, Manderson, Sharps Corner (old Stage 1)

Funded

$1,499,000 from BOR

Funded with Mni Wiconi money under a Memorandum of Agreement (MOA) with Indian Health Service. This construction began April 29th, 2019. There is a planned transfer to BOR during FY20.

LEVEL II

Wounded Knee (old Stage 2a)

Funded

$1,333,333 from USDA-RD Water and Environmental Programs (WEP) Native American Set-Aside Funds

Responses to the draft final design are in process, submitted to BOR and USDA-RD. They are currently working on easement issues to go to construction bids. The project is cleaning up old easements and making them acceptable under new Bureau of Indian Affairs regulations. This level is scheduled to be completed by September 2020.

LEVEL III

Wanblee Community, Allen, Porcupine Community, Wolf Creek/Wakpamni Lake/Potato Creek (old Stage 2b), Kyle Village, Evergreen (old Stage 3)

Funded

$10,067,000 from USDA-RD WEP Native American Set-Aside Funds

There is a funding shortfall of $416,000 for Kyle Village due to the $2,000,000 cap on Native American Set-Aside funds. The project also is in need of $150,000 to do the easement work for Wanblee; some weren't finished and all need to be in order to transfer to the BOR.

LEVEL IV

Red Shirt, Sunrise, Martin North, Red Rocks (old Stage 3), Oglala Community (old Stage 4)

Application Submitted

$4,656,113 from USDA-RD WEP Native American Set-Aside

The project cannot prove asbestos cement (AC) pipe is present, so MAP and others are in the process of documenting other health and safety issues.

LEVEL V

Pine Ridge Village (old Stage 4)

Application Submitted

$15,331,000 from USDA-RD WEP Native American Set-Aside Funds

There is a limit of $2 million per project under the USDA Rural Development Native American Set-Aside program. The project needs to get a limit waiver or find 25 percent of project funding from other sources to obtain the overall funds for Level V. At the time this article was written, there have been considerations of further phasing this level. Other agencies, like BIA, would need to be engaged. The Village is an Opportunity Zone, where the tax credits should benefit agency funding.

In order to bring this project to fruition and eventually completion, there are multiple agencies/entities and individuals involved. The agencies/entities and individuals involved include, but are not limited to: the Tribal President and Oglala Sioux Tribal Council, especially the Economic and Business Development Committee; members of Congress and Congressional staff; Indian Health Service; the U.S. Department of Agriculture Rural Development (USDA-RD, who is a major funder for the project); the Bureau of Reclamation; Morrison-Maierle Engineering; the Midwest Assistance Program (MAP, the Midwest RCAP); tribal consultants, the U.S. Environmental Protection Agency (EPA); and the Bureau of Indian Affairs (BIA).

Reports from both the BOR and EPA Sanitary Survey in 2010 indicated public water system repairs/upgrades were necessary. Additionally, changes in the water supply required updates and the decommissioning of existing system components, including the wells and treatment buildings in some communities. Asbestos drinking water main replacement in some communities was also necessary, as well as fire hydrant replacement.

“Challenges of note include undocumented pipeline locations, new surface features since original construction, and easement acquisition,” said Morrison-Maierle Project Engineer Craig Nowak. “Pipeline easements were not a requirement for original construction; however, easements are now required, a task not easily accomplished.”

Over the past few years, MAP staff performed 18 Environmental Reviews/Reports for the “Seven Years for Seven Generations” project. MAP staff also worked with South Dakota USDA Rural Development staff to answer questions and assist with processing the Environmental Reviews/Reports. A significant amount of cultural and historical research has already been conducted and continues to be an ongoing component of the project as construction continues.

Most recently, MAP staff has been providing technical assistance to the Oglala Sioux Tribe by assisting with research and planning for funding for the following project communities: Red Shirt, Sunrise, Martin North, Red Rocks, Oglala Community and Pine Ridge Village, which has a cost estimate of $15,000,000. MAP is investigating funding sources including USDA WEP funds, Rural Utilities Service (RUS) Substantially Underserved Trust Area (“SUTA”) funds (from 2008 Farm Bill), and other potential funding sources. Though originally envisioned for “Seven Years,” this project could take several more years to complete in its entirety, depending on project funding success as well as necessary easement acquisition. Despite its complexity, it will most certainly position the nearly 20 communities involved with a connected and sustainable drinking water system for generations.

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Derek W. Starkety, P.E., City Engineer, City of Fernley-Public Works Department

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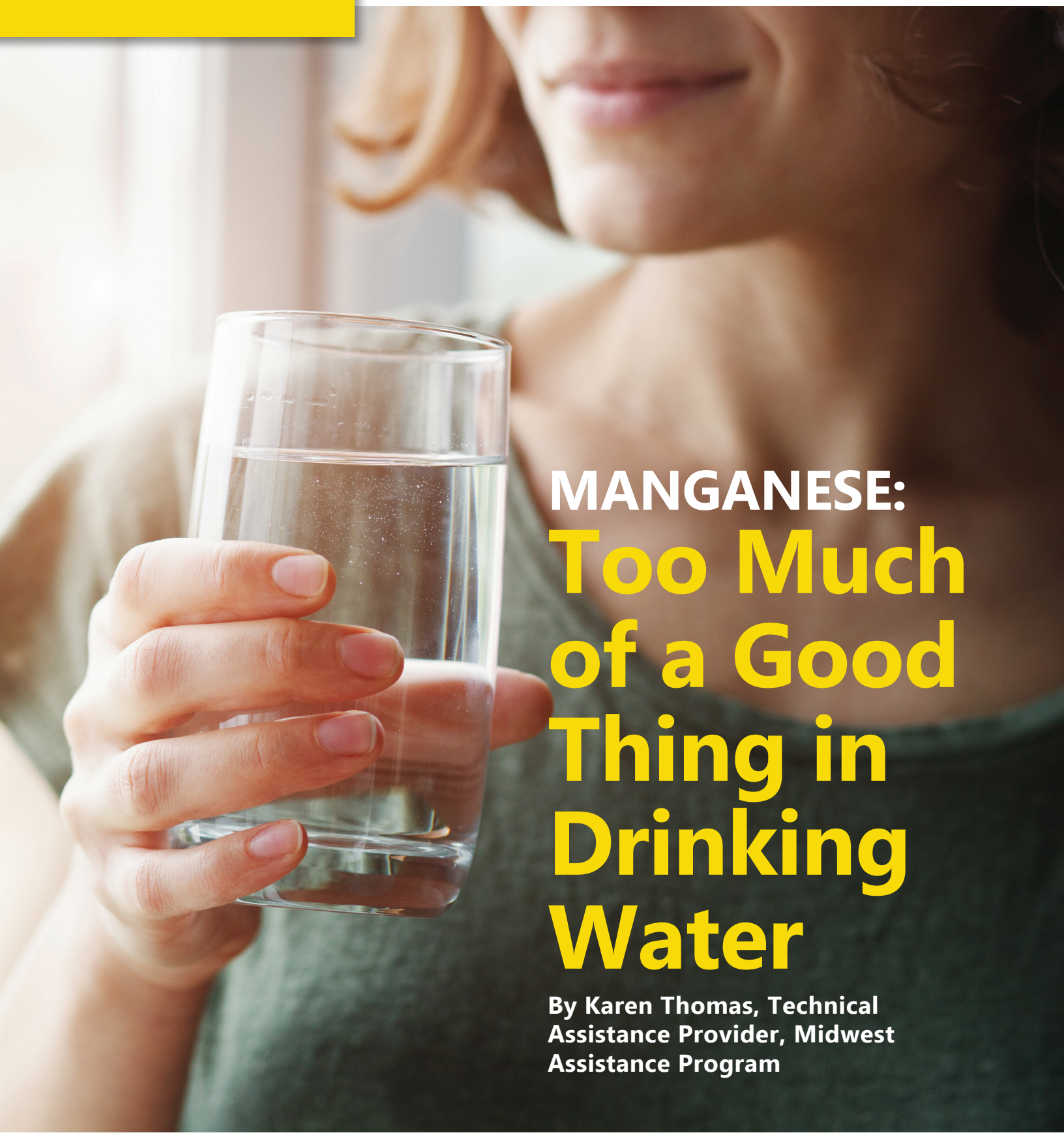
Feature Article



MANGANESE: Too Much of a Good Thing in Drinking Water

By Karen Thomas, Technical Assistance Provider, Midwest Assistance Program

Mankind has been using manganese for thousands of years; it was used as a pigment in ancient cave paintings and the Romans used it to create colorless glass. In the 19th century it became widely used in the production of steel, iron, and an alloy aluminum that doesn't rust. Even that disposable AA battery that you just put into your TV remote control has manganese in it. Not only does manganese have industrial uses, it is a mineral that is commonly found in everyday food such as pineapple, spinach, corn, and rice. It is essential for human health as a strong antioxidant, for supporting bone health and growth, balancing blood sugar, supporting respiratory health, helping with brain function and many other benefits. But when is it too much of a good thing?

Even with all its health benefits, when too much manganese is ingested, it may cause negative neurological impacts. High levels of manganese ingestion are of special concern for bottle-fed infants under one year of age and young children who are still developing.

Historically, before health effects of over-exposure had been observed, the U.S. Environmental Protection Agency (EPA) had considered manganese to be mostly an aesthetic nuisance due to the staining and brown color it gives to drinking water. There still are no primary federal regulatory limits under the Safe Drinking Water Act, though, in 2004, EPA established a maximum contaminant level of .05 mg/L. The EPA also developed a lifetime health advisory level (HAL) for manganese in drinking water of 0.3 mg/L.

The HAL allows states to issue a public notice to communities found to have manganese levels in their drinking water that exceed 0.3 mg/L. This level is set to protect a person over a lifetime of exposure. It is recommended that infants up to 6 months of age should not be given water or have formula made with manganese concentrations greater than 0.3 mg/L for more than a total of 10 days, and the rest of the population should not ingest water with manganese concentrations greater than 1 mg/L for more than a total of 10 days per year. Some states may have more stringent standards regarding manganese levels in drinking water.

How do water systems treat for manganese and what can homeowners do to protect their family from ingesting dangerous levels of manganese? Methods used to treat for manganese in drinking water treatment plants will depend on the chemistry of the water. Drinking water systems with lower amounts of manganese can use phosphate compounds to sequester the manganese. This is a fairly inexpensive and widely used process. Water sources with higher concentrations of manganese may need to use oxidation and filtration, lime softening, reverse osmosis, or ion exchange. Each of these processes have pros and cons to consider regarding cost and effectiveness for the drinking water system.

When a public notice goes out for exceeding the HAL, it is important to educate the customers that boiling water does not remove manganese; it actually makes it worse by increasing the concentration. Point-of-use devices such as reverse osmosis and water softeners are both effective ways for residents to treat for manganese in the home. If a resident is concerned about manganese levels in their drinking water, we suggest taking a sample to a laboratory that is certified to test drinking water.

The U.S. EPA has recently renewed their interest in manganese levels in drinking water. The agency is asking drinking water systems serving 10,000 or more customers to sample for manganese as part of the Fourth Unregulated Contaminant Monitoring Rule (UCMR4) which is conducted every five years. This data will give the EPA a broad picture of the manganese levels in drinking water systems across the country. For now, the future of manganese guidance and regulations for drinking water is unknown. As more studies are conducted and the scope of manganese in drinking water is analyzed further, the best practice is to stay up-to-date with your state drinking water primacy agency's guidance. Meanwhile, eat a healthy dose of manganese in that spinach salad and enjoy that channel surfing!

Information for this article was retrieved from the following sources:

South Dakota Department of Environment and Natural Resources. (date unknown). Drinking Water Program. *Manganese in Drinking Water.* Retrieved from https://denr.sd.gov/des/dw/Manganese.aspx

United States Environmental Protection Agency. (2004, January). Drinking Water Health Advisory for Manganese. *Regulatory Determination 1 Support Documents for Manganese.* Retrieved from https://www.epa.gov/ccl/regulatory-determination-1-support-documents-manganese

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Feature Article

How One System Reduced Disinfection Byproducts in Drinking Water

By Mat Wiseman, Technical Assistance Provider, Great Lakes Community Action Partnership

State and federal regulations require that almost all Public Water Systems disinfect water before it is provided to customers. Disinfection is used to eliminate pathogens, such as Giardia, Cryptosporidium, and viruses. These are often found in source water and can cause gastrointestinal illnesses and other health risks. When a system disinfects using chlorine, it can result in disinfection byproducts. This occurs when disinfectants react with naturally occurring organic material in the water.

Byproducts produced may include Total Trihalomethanes (TTHM) and Haloacetic Acids (HAA5). The U.S. Environmental Protection Agency (EPA) regulates four TTHM compounds: Chloroform, Bromodichlorothane, Dibromochloromethane, and Bromoform. Disinfection byproducts (DBP), if consumed in excess of EPA standards over many years, may increase public health risks. The EPA set the maximum contaminant level (MCL) at 80 parts per billion (ppb) for TTHMs. TTHMs are calculated on locational

running annual averages (LRAA), and when those quarterly samples exceed the MCL, systems receive violations. Those violations require public notification, resampling, and potentially changes to treatment processes.

A Class III public water system RCAP served in West Virginia was exceeding the MCL for TTHMs. This system had some sampling results that were as much as three times the legal limit. The system started looking at ways to reduce this amount to meet this Safe Drinking Water Act (SDWA) requirement. In 2011, the EPA and West Virginia Department of Health and Human Resources (DHHR)/Office of Environmental Health Services (OEHS) started a special study. This special study was specifically created to research and find solutions for DBP reduction. This Class III system was one of a few that were selected to participate in this study. The study group lasted for two years and met quarterly.

The system started to rectify the situation by making some initial treatment changes. In May 2013, they reduced the pre-chlorination feed from about 50 percent to 25 percent and added a carbon feed system. They also optimized the potassium permanganate feed. These changes contributed to sizable reductions in the system's TTHM levels, but they continued to experience issues in warmer months.

While doing research, field testing, and participating in the special study, the system found that aeration was the best way to reduce TTHM levels after they were formed. They considered a spray system, which uses water from the clearwell and sprays it out over its surface, aerating the clearwell. A clear well is a component of a drinking water purification system where filtered water is held in a storage basin to allow the disinfectant to inactivate any remaining pathogens. By putting the aeration system in the clearwell, their goal was to reduce TTHMs at the plant – which would also lead to a reduction of TTHMs in the actual distribution system. The water system chose to install the aeration system in the clearwell (as opposed to installing them in every tank) to save money.

The spray system uses special spray nozzles that disperse the water in tiny droplets, which strips the TTHMs from the water and releases them into the air. At the same time, mixing the clearwell and turning it over also reduces TTHMs. In June 2013, the system installed one nozzle and studied the results over a year. The nozzle ran only during shutdown periods. The system, from just that small change, saw significant removal of TTHMs. In September 2014, they installed a second spray nozzle and a timer to increase turnover time and improve the removal rate.

The initial start-up cost for this system was $3,500 with an annual cost of $600. The water system has a 100,000 gallon clearwell with two stainless steel spray nozzles specifically designed for this application to cover the entire area of the clearwell. The spray system pump is connected to a timer that is set to run on three-hour intervals

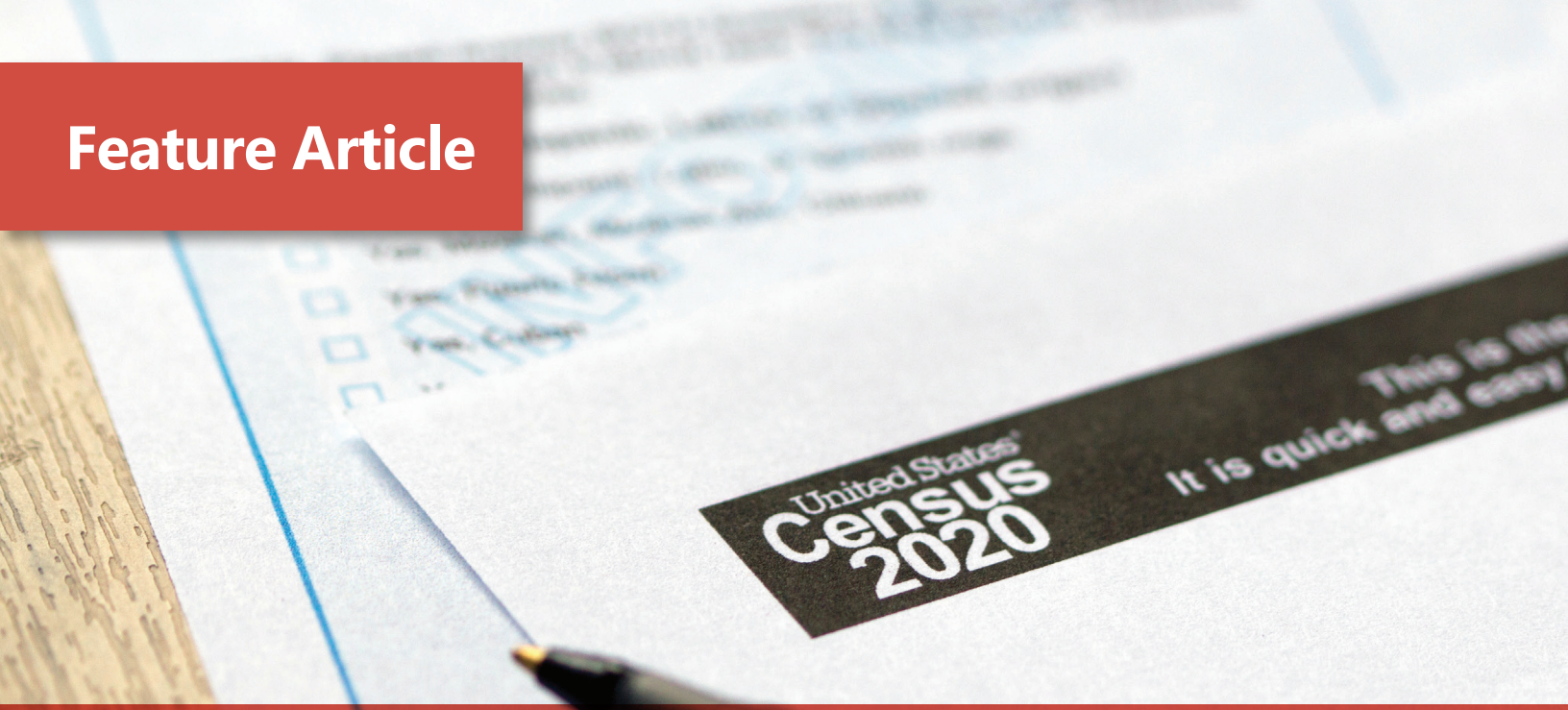
throughout the day. The system used this timeframe because of the size and flow of the pump. This set up will turn the clearwell over two times every three hours.

In 2015, the operators started their own study after the spray system was installed to determine what removal rate they were achieving. The study was conducted by performing two tests every morning for a week with the aeration system completely shut off. The following week, keeping all other variables constant, two tests were conducted every morning with the aeration system running. After reviewing these results, along with the required compliance testing results, the system saw a removal rate exceeding 40 percent. Following the installation of the aeration system, their quarterly compliance sample results were the lowest they had seen in more than seven years.

Since the installation of the aeration system, the water system has been in compliance with the regulated limits of TTHMs. In addition to the aeration system, the operator made a few more treatment changes that have further reduced TTHM levels. In September 2014, they also moved the potassium permanganate feed point closer to the raw water intake. This increased the contact time of the potassium permanganate by almost double. It also allowed them to increase the feed rate of the potassium permanganate to remove more natural organic material from the raw water before the disinfection process is started. Recall, in 2014, the system began reducing the pre-chlorine feed. With the changes they were able to make, the system now has stopped pre-chlorination completely, significantly reducing TTHMs.

This shows that with proper treatment changes and in-plant aeration, systems can significantly reduce TTHMs. If TTHMs are removed at the plant, in turn, it should reduce them in the distribution system, further ensuring local residents have safe, reliable drinking water.

Feature Article



YOU'RE INVITED:

Respond to the 2020 Census to Help Your Community

By Ashley Zuelke, RCAP Senior Director of Research and Communications

This year, nearly every household in the United States and five U.S. territories will receive an invitation to complete a short form. Though responding usually takes 10 minutes, the resulting data will impact communities for the next decade.

Public responses to the 2020 Census can help provide a brighter future for this and future generations. Policymakers, business owners and many others use Census data to provide critical daily services. Responses shape how hundreds of billions of dollars each year reach communities to fund new infrastructure investments and roads; new schools and clinics; and services for families, older adults, and children. Many of the communities whom the RCAP Network serves depend on federal programs that will be required to use 2020 Census data to determine eligibility and select investments.

Complete and accurate Census results not only can provide funding benefits but also ensure fair government representation. The data is used to adjust or redraw electoral districts. That is how U.S. censuses began, as outlined in the U.S. Constitution.

Responding to the Census is safe. Responses are confidential and protected by law. The U.S. Census Bureau is a nonpartisan government agency and never shares personal information with any other government agencies or law enforcement, including federal, local, and tribal authorities. Multiple layers of encryptions secure online responses.

We recommend rural populations be prepared to take the Census ID on their invitation and go online to complete the form. For the first time this year, you can respond by mail, by phone or online.

Invitations will reach individuals in two ways. The majority of U.S. households will receive an invitation in the mail. About five percent of households, including many in rural areas that use P.O. boxes, will receive their invitation when a census employee drops it off. Less than one percent of households – those in very remote areas and in select American Indian areas – will be counted in person by a census taker.

With social distancing and stay-at-home measures during the COVID-19 pandemic, some rural and tribal community residents may not receive an invitation as early as intended, but don't worry. Responses are not due until October 31, and the U.S. Census Bureau is working to ensure everyone receives invitations as soon as possible.

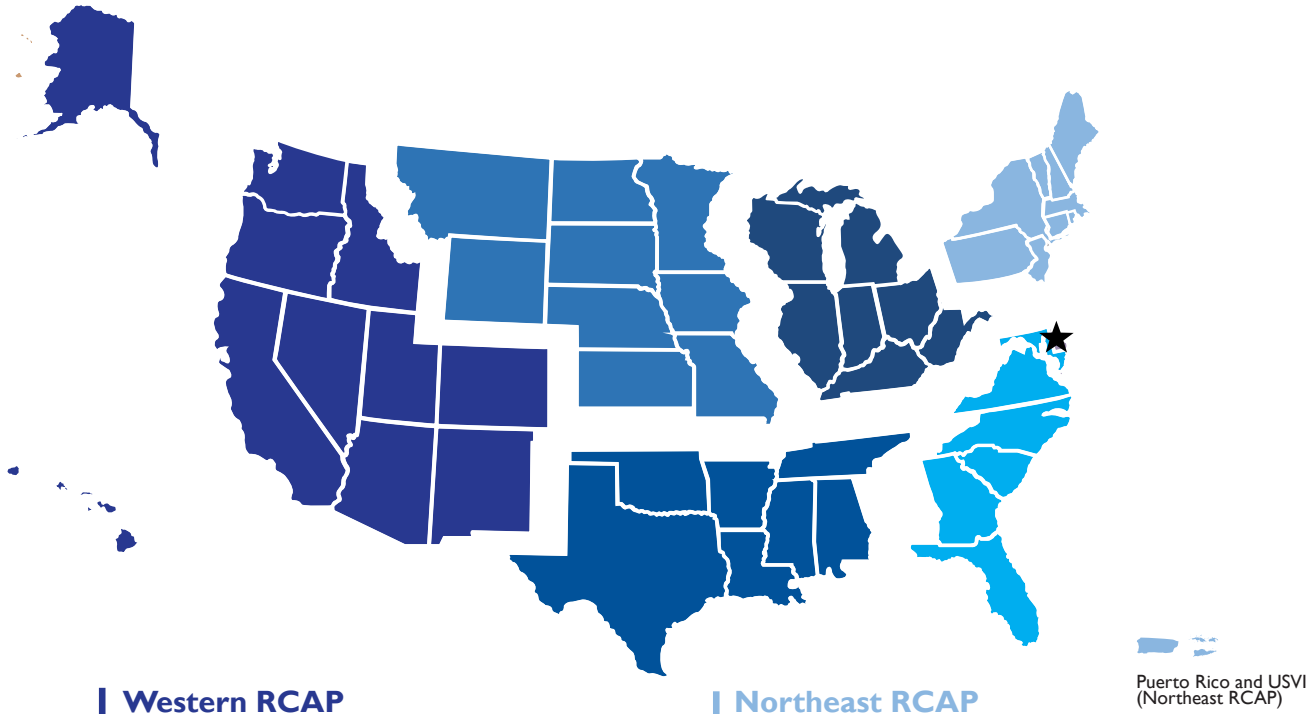
Upcoming Events & Trainings

SPONSOR	EVENT	DATE	EVENT DETAILS
Wateroperator.org	Advanced Tips & Tricks for Social Media	June 3, 2020	wateroperator.org/calendar
American Water Works Association (AWWA)	The Development and Application of Level of Service	June 3, 2020	https://www.awwa.org/Events-Education/Events-Calendar/ctl/ViewEvent/mid/6794/OccuranceId/282
RCAP/ U.S. Environmental Protection Agency (EPA)	Americ's Water Infrastructure Act (AWIA): Guidance for Small Systems	June 10, 2020	https://www.epa.gov/waterresiliencetraining/partnering-security-and-resilience-webinar-series
Rural Community Assistance Corporation (RCAC)	How to Prepare for Sanitary Surveys	June 17, 2020	https://www.events.rcac.org/assnfe/ev.asp?ID=1936
New York Section American Water Works Association (NYSAWWA)	Communication about Water-Putting the Pieces Together	June 25, 2020	https://zoom.us/webinar/register/WN_Kn2PpERYSRCMUYe5D8Ta4g
Rural Community Assistance Corporation (RCAC)	Sustainable Utility Management	July 30, 2020	https://www.events.rcac.org/assnfe/ev.asp?ID=2089

For more events and trainings, visit rcap.org/training and wateroperator.org.

Rural Community Assistance Partnership

*A non-profit network reaching rural and small communities in all fifty states to improve quality of **life.***



Puerto Rico and USVI (Northeast RCAP)

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West Sacramento, CA 95691
(916) 447-2854
www.rcac.org

Midwest RCAP
Midwest Assistance Program (MAP)
303 N. Market St., Suite 2
Maryville, MO 64468
(660) 562-2575
www.map-inc.org

Southern RCAP
Communities Unlimited
3 East Colt Square Drive
Fayetteville, AR 72703
(479) 443-2700
www.communitiesu.org

Northeast RCAP
RCAP Solutions
191 May St
Worcester, MA 01602
(800) 488-1969
www.rcapsolutions.org

Great Lakes RCAP
Great Lakes Community Action Partnership
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127 S. Front St., 2nd Floor
Fremont, OH 43420
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www.glrcap.org

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