

Spring 2021



# RURALMATTERS

The magazine of the Rural Community Assistance Partnership

## The *Drinking Water* Issue

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RCAP's Agua4All Program Delivering Safe Drinking Water to  
Schools Across Rural America

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Alturas de Collores and Their Journey to Treated Water

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Innovative Research to Improve Water Security in Colonias -  
A RCAP and Arizona State University Collaboration

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Tools for America's Water Infrastructure Act (AWIA) Compliance

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The Port Royal Water System, a Work in Progress

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**S**afe drinking water is essential. Never has that been more apparent than during the COVID-19 pandemic. As utilities have enacted moratoriums on water shutoffs, families have continued to have access to safe drinking water, even when those most affected by the pandemic have not been able to afford their bills. A first of its kind water affordability program was piloted in December's COVID relief bill, and for the first time during the pandemic, we are seeing a flurry of activity in Congress focused specifically on water and wastewater funding. More importantly, the work happening across the country through the six RCAP regional partners continues to ensure access to safe drinking water in the smallest, most distressed communities.

While RCAP has seen tremendous growth over the past four years, the need for our services continues to expand. With 97 percent of the approximately 150,000 public water systems serving communities of 10,000 or less, and the COVID-19 pandemic exacerbating the already complex and inequitable growth for rural and tribal communities, RCAP will continue to be a partner to the hardest hit regions across the country. The efforts on the ground, directly assisting communities, is the core of the work happening across RCAP. Those long-term, trusted relationships with thousands of communities is what makes this work so powerful and special to be a part of. It is also our responsibility to raise the voice of those we serve, to spotlight the inspiring stories of determination and resilience we see each and every day.

Whether it is advocating for policy changes that will positively impact rural and tribal communities, highlighting data and research on both the issues and opportunities they are facing, or building partnerships to expand the work on the ground, RCAP is here to serve, honor, and support rural America. This issue of Rural Matters showcases the incredible work happening around drinking water access and showcases its vital importance. The stories you will read are just a few of the thousands from across the country. We invite you to not only read and be inspired by these stories, but to be a part of them. If you know of a community that could use these services...if you know a policy maker who could better understand water access issues in rural America...if you have a story to tell...or if you are part of an organization we should be connecting with, please reach out.

As the Rural Community Assistance PARTNERSHIP, we are always looking for new ways to impact the communities we serve, and lift up the voices of those most in need. I hope you enjoy this issue of Rural Matters as much as we all enjoy the work that inspires it.

A handwritten signature in black ink, appearing to read "Nathan Ohle". The signature is fluid and cursive.

**Nathan Ohle**  
RCAP CEO

# Training for AWIA Compliance

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**American Water Works  
Association**



# Water Infrastructure - a Bipartisan Issue in Washington



Ted Stiger  
Senior Director of Government  
Relations & Policy

**I**t is rare these days to find bipartisanship in Washington on most issues, but water is not one of them. This spring, the United States Senate on a bipartisan basis, passed the Drinking Water and Wastewater Infrastructure Act (DWWIA) of 2021.

This water infrastructure legislation will help rural communities by breaking down barriers that make it difficult for small and disadvantaged systems to access federal funds. First, the bill increases authorizations for the Drinking Water and Clean Water State Revolving Funds and increases the percentages of these funds that states must use for grants, negative interest loans, and debt forgiveness measures. Additionally, the bill provides several new avenues for rural communities, schools, and childcare centers to access technical assistance and training from qualified non-profit organizations. Improved access to funding and technical assistance will give many small systems the capacity they need to become financially independent and to ensure reliably safe and affordable service to their customers.

RCAP also strongly supports the creation of a nationwide, permanent federal low-income water assistance program. Although this provision did not make it into the Senate bill, we are appreciative of the Senate's efforts to create a pilot program toward those ends, as well as the \$1.1 billion in funding for low-income assistance provided by recent COVID-19 relief packages. While these will not adequately meet the funding need, currently estimated to be over \$8 billion, they represent a strong first step towards an eventual nation-wide, permanent assistance program. In March, RCAP's Chief Executive Officer, Nathan Ohle, testified in front of the Senate Committee on Environment and Public Works in support of the proposed low-income assistance program and the provisions expanding technical assistance to communities that need it most.

How DWWIA fits into the larger infrastructure conversation along with transportation programs and negotiations with the U.S. House are murky at best. In April, President Biden released his American Jobs Plan (AJP), which proposes to spend \$2.5 trillion in infrastructure investments over the next 10 to 15 years. Currently, the AJP is a broad framework and leaves it to Congress to debate the details through various pieces legislation. The good news is that the AJP proposes to invest at least \$111 billion in water infrastructure, including \$10 billion specifically for rural water infrastructure. RCAP recently sent a letter to leadership on Capitol Hill outlining our priorities for small and rural communities nationwide.

RCAP and our partners are continuing to beat the drum for improved water infrastructure by helping communities and water systems access much-needed federal resources and capacity. It is our hope and goal that water issues remain a bipartisan issue to ensure the safety and wellbeing of all Americans.

# Land Stewardship through Unlikely Collaboration.



From protecting clean water to creating economic opportunities, communities across the Mountain West are partnering with the LOR Foundation to co-create solutions that meet daily needs. We listen first, then collaborate with local advocates, experts, and philanthropies using an evidence-based approach.

#EXPLORE our impact at [lorfoundation.org](https://lorfoundation.org)



# TAZEWELL PRIMARY SCHOOL

## RCAP's Agua4All Program - Delivering Safe Drinking Water to Schools Across Rural America

Principal Chandra  
Ashby & Assistant  
Principal Melett  
Smith from Tazewell  
Primary School

**T**he California Endowment launched Agua4All in 2014 in partnership with nonprofit organizations Rural Community Assistance Corporation (RCAC), Community Water Center and Pueblo Unido CDC to increase access to and consumption of safe drinking water in schools in the Central and Coachella Valleys.

Since the program's launch, RCAC's team has installed more than 450 water bottle filling stations in over 90 schools in more than 35 rural California communities, and 177 point-of-use arsenic filters in six Arvin, CA schools and various community buildings and parks. As the Rural Community Assistance Partnership's (RCAP) western regional partner, RCAC's work in piloting Agua4All has led to opportunities to expand the program beyond California. RCAP completed a successful Agua4All pilot program in three Texas schools in 2019 and in 2020 expanded to Virginia, Missouri and Montana. Program expansion has been made possible through partnerships with CoBank and the Chris Long Foundation (CLF).

### Agua4All can:

- Fund bottle filling stations in schools and key community sites to help deliver safe, appealing, and affordable drinking water.
- Fund reusable bottles for students and staff use to further encourage increased water consumption.
- Reduce disposable plastic bottle waste by encouraging tap water consumption and reusable water bottle use. Filling stations can include counters that measure impact showing reduced use of disposable plastic water bottles.
- Provide student and community education on local water quality issues and to promote healthy beverage choices.
- Provide capacity building via training and technical assistance to school and community sites to ensure ongoing safe water access.
- Ensure students stay hydrated, which has been linked to higher academic performance.



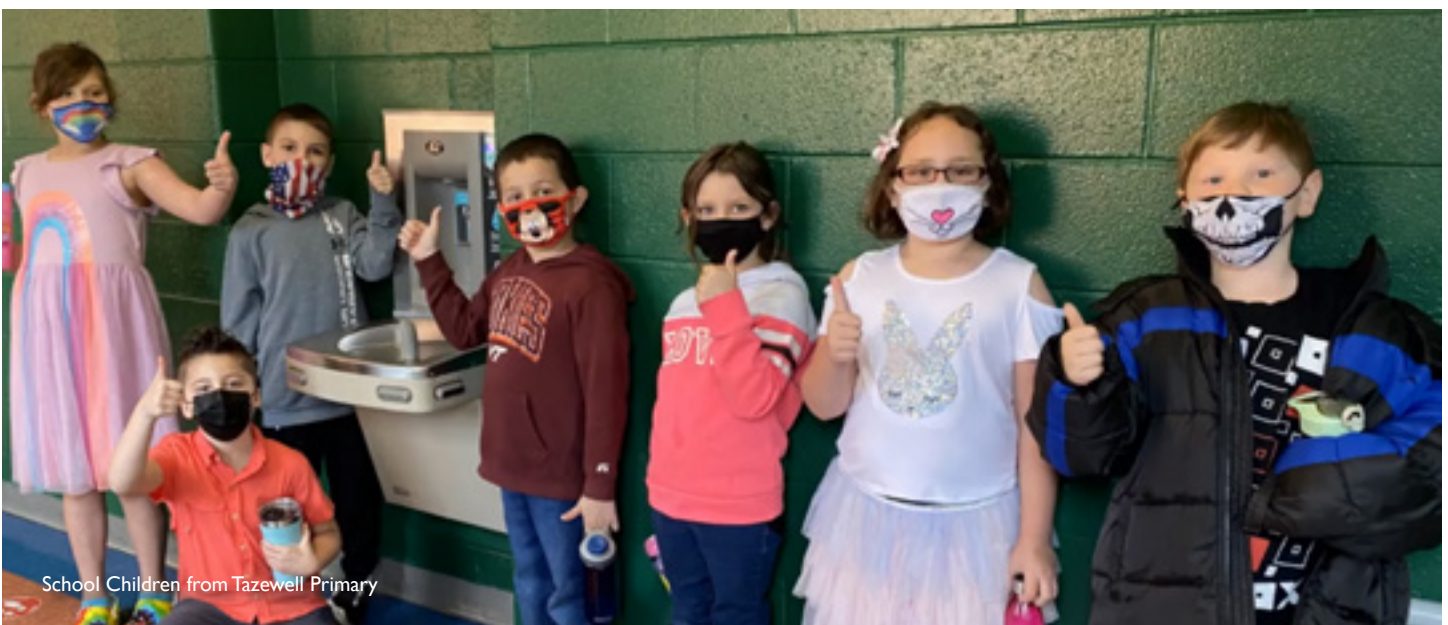
On Earth Day, April 22, 2021, the Rural Community Assistance Partnership (RCAP), Midwest Assistance Program (MAP), Southeast Rural Community Assistance Project (SERCAP), the CLF, and CoBank hosted an Agua4All virtual launch event with schools across the country to celebrate the installation of water fountains and bottle fillers in small, rural underserved schools. The 2020-2021 pilots funded by CoBank and the CLF, helped small, rural school districts in Missouri, Montana and Virginia and included the installation of more than 30 bottle filling stations, the provision of reusable bottles, and on-site water treatment where necessary in schools that had previously had water quality challenges.

Over 75 people from across the country were part of the April 22 live event including rural school districts, federal and state agencies, and technical assistance providers. Additionally, RCAP received over 70 interactions on Twitter during the livestream. The event included conversations with the funders about the importance of safe drinking water access, especially for young people, including former NFL player, Chris Long, himself, videos from three of the school district participants and a presentation on EPA's 3Ts program which helps schools and childcare facilities protect children from lead contamination.

The fruitful partnership with the CLF and CoBank has continued and through it, RCAP has secured funding to



expand this important work to Alabama, Massachusetts, and Wisconsin (including tribal schools and schools with lead challenges) and additional work in Texas along the U.S.-Mexico border. RCAP and CLF plan to co-host a crowdfunding campaign later in the year to add onto the existing work in Virginia and RCAP recently applied for the W.K Kellogg Foundation's Racial Equity 2030 competition to spread Agua4All Across America. [🌊](#)



School Children from Tazewell Primary

# Alturas de Collores Chlorine Treatment

Juan Campos Collazo, Community Development Specialist RCAP Solutions Caribbean

**T**he Alturas de Collores community is located in central Puerto Rico in the town of Jayuya and is composed of 100 families with a total population of almost 400 people. They operate a small drinking water system consisting of a surface water stream providing water by gravity to a first storage tank (Tank #1 with a 10,000 gallon capacity) that fills a second storage tank (Tank #2 with a 4,000 gallon capacity).

Both tanks supply water to different parts of the community, which means each tank has a distribution pipeline. Tank # 2 has an overflow (a piece of pipe that spills the excess water) to the nearby stream because neither of the tanks have a system to control the water level. The water system also has a tablet chlorinator (a system to apply disinfection treatment using chlorine tablets) that is not in use to avoid a violation of the EPA Clean Water Act and the State Department of Natural Resources. The law states that “the spill of chlorinated water into any source of water, in this case the nearby stream, would be an infringement of the law.”

RCAP Solutions was contacted by the Primacy Agency to assist with the overflow issue in order to get the chlorine treatment system functioning correctly. RCAP Solutions met with the Alturas de Collores Board president,

Carmen Heredia, to discuss the community needs and to establish an action plan. The most important issue with the community is the chlorine treatment that was already installed but not in use because the system does not have a float valve, and part of the water overflows into the nearby creek.

RCAP Solutions evaluated, in coordination with the operators, what alternatives can be implemented to solve the situation. A meeting at the water system was coordinated with the operators and some Board members in the community to analyze the problem and develop a work plan. RCAP Solutions made a schematic of the water system’s reserve tanks, which is a useful tool to determine the best equipment to control the water level and avoid the water loss by overflow.

After some analysis, the alternative proposed by RCAP Solutions was to install two float valves, one in each tank, to control the flow and avoid the overflow. Another option considered was to modify the second tank to use only one float valve instead of two. The community agreed with the idea of modifying tank # 2, to use one float valve to control the water level of the two tanks. That idea would require a lot of work but was more attractive in terms of cost and ultimately, they will be able to operate the chlorine



treatment system to protect community health, which was the main goal from the outset.

The community began working on the project but was delayed by weather and later by Hurricane Maria. All the work came to a stop as the recovery of families from the hurricane's impact was the new priority. A month after the hurricane, the community restarted their work on tank # 2. Fortunately, the work done before the hurricane was not damaged, but more rain delayed the project.


At the same time, as a result of the damage done by hurricane Maria, some non-profit organizations were trying to assist small rural communities with funding. One of these organizations, the Rotary Club of San Juan, offered funding to Alturas de Collores, requesting community information and cost estimates for community needs. RCAP Solutions met with the Board president of Alturas de Collores (Carmen) in Ponce. Carmen explained that they needed to supply documents to the Rotary Club of San Juan by email. Carmen requested that RCAP assist with this task because the community was still without power. She provided the necessary information and RCAP Solutions sent the documents to the Rotary Club, who then requested cost estimates for the improvements, which included the float valve system and chlorinator treatment tablets.

RCAP Solutions visited the Alturas de Collores community to check the work done on the distribution tanks. The community members made the improvements to the second tank so that once funding was secured, they could use only one float valve to control both tank levels. They also made improvements to the hatches of the tanks.

Next, they needed cost estimates for the new float valve and tablet chlorinator to submit to the Rotary Club. This was an opportunity for the community to receive funding for the float valve to control the water level at both tanks, and for the replacement of the tablet chlorinator, which was in bad condition. RCAP Solutions assisted the community by getting cost estimates for both, which were sent to the Rotary Club for evaluation of the cost estimates which and then were then approved. The Rotary Club of San Juan purchased the equipment and RCAP Solutions picked it up, delivered the float valve and tablet chlorinator, and explained how to install them properly to community members.

Once the community was able to install and adjust the new float valve, RCAP Solutions was brought in again to assist with the installation of the chlorinator ... and the task was finally completed. But the work was not over, yet. After a site visit was coordinated to adjust the chlorine dosage, it was determined that the float valve was not working, and the tank water was overflowing into the nearby creek. After some investigation, it was decided that a longer pivot was needed for the float valve to work properly. The tablet chlorinator adjustment needed to wait until the float valve problem was solved. The community was able to troubleshoot the problem, fix it and then get the chlorinator up and running. They now have adequate chlorine residual and are back in compliance.

After many years of drinking surface water without any treatment, the Alturas de Collores community is closer than ever to having chlorine treatment to protect the health of their members against bacteriological pathogens. The community Board is very excited about fulfilling this goal and are very appreciative of RCAP Solutions for the support given throughout this process.

"The community Alturas de Collores of Jayuya are very grateful and pleased with RCAP Solutions, represented by Juan Campos, for all the attention and services they have offered us," stated Carmen Heredia, Alturas de Collores Board president. "They were always available when we contacted them to request advice in any situation that arose. They also helped us find the solution with the purpose of improving our aqueduct [a term commonly used in Puerto Rico to describe water systems]. We always look forward to [their] advice. Thank you for all the time dedicated to us." 

# Innovative Research to Improve Water Security in Colonias - A RCAP and Arizona State University Collaboration

Laura Landes, Nargish Patwoary, Dr. Carmen Velasco, and Madeleine Zheng

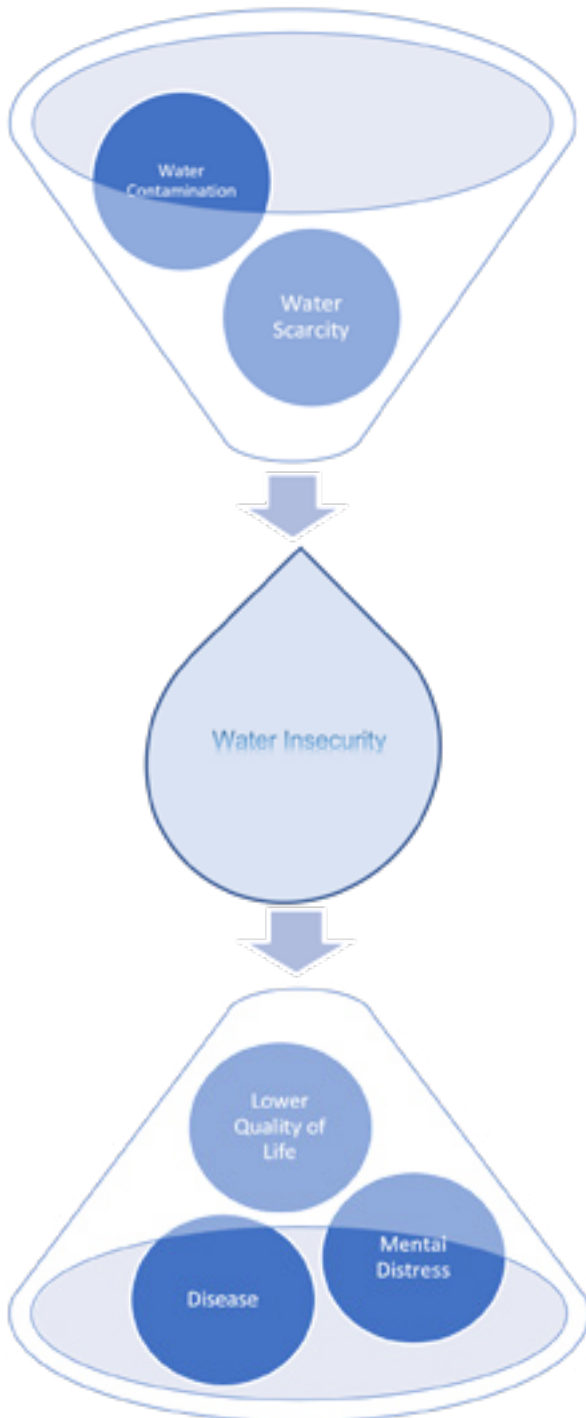
**C**olonias are unincorporated communities of low-income families along the US-Mexico border which, though defined differently by various government agencies (both at the federal and state level), are generally lacking in basic services. There are over 2,100 colonias in California, Arizona, New Mexico, and Texas combined, which places most of the colonias near the US-Mexico border (most definitions specify within 150 miles of the border). Many colonias were formed as residential communities with the promise from local governments, including basic services such as drinking water, electricity, and paved roads which never materialized. Some key characteristics of colonias include minimal or no access to basic physical infrastructure such as a potable water supply, sanitation systems, and/or adequate housing and roads.

Lack of clean, safe water and sanitation services is a major public health issue. As a result of systematic denial of service and neglect as it relates to access to water, colonias residents are forced to: haul water under unsafe conditions; use potentially non-potable well water; fashion makeshift service lines which could contaminate water; pay for trucked-in water; purchase substantial amounts of bottled water; or use other means of accessing water

that most water-secure people in the U.S. would not have to consider. In addition, there may be dangerous chemical or microbial contaminants in the source water, unsafe levels of disinfection byproducts, and/or metals from makeshift service lines within the water residents consume. Due to the widespread lack of water monitoring and regulation within colonias, it is difficult to know the full extent to which residents may be at risk because of water insecurity. Although difficult to study and measure, our previous experience and work in the field indicates there is insufficient access to water for residents. The COVID-19 pandemic has also highlighted the dangers of , as well as the potential mental health impacts caused by the stress of trying to locate water daily. Water insecurity impacts quality of life, including economic opportunity, as well as mental and physical health (Figure 1).

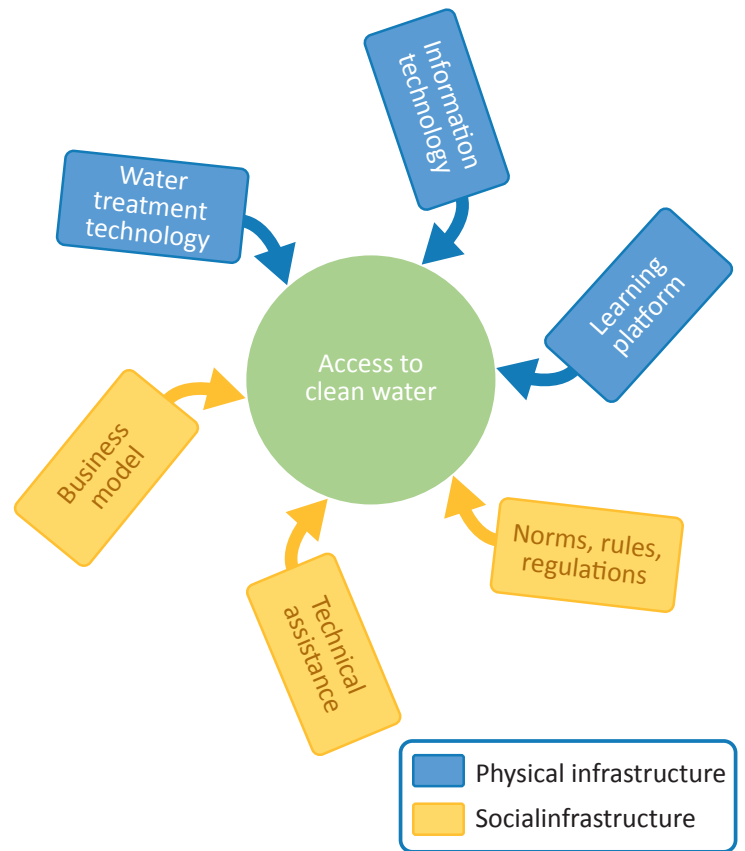
Despite the multiple obstacles many community members face when obtaining water, colonias residents are resourceful and have produced ways to share water resources with one another. In our research we call these “informal water sharing solutions”, defined as the integrated physical and social components of infrastructure that

**Figure 1**  
*Causes and effects of water insecurity*




facilitate transfers of water between users to deliver water at the household level within informal settlements. In informal water sharing solutions, physical and social infrastructure are less structured. A few examples of this include a single rainwater barrel, a plastic milk jug, and peer-to-peer exchanges within networks of relatives or close friends.

**Figure 2**



We have brought together RCAP staff and academics from specific fields at Arizona State University (ASU) to better understand water insecurity in the colonias, the use of informal water sharing solutions, and what approaches can be used to improve water security for residents. To tackle such a complex issue, our novel approach involves a convergence between fields such as sociology, anthropology, engineering, law, hydrology, economics and geography coupled with RCAP’s deep knowledge and expertise working in the field providing technical assistance to these communities. The water access and equity challenge in the U.S. calls for the confluence of diverse scientific methods, traditions, and approaches to facilitate better integration of social and physical infrastructure (Figure 2).

We hope to produce unique and sustainable solutions applicable to both colonias and other communities challenged with water inequity across the U.S through this interdisciplinary collaboration. By taking advantage of the huge breadth of knowledge brought by our team and prioritizing the needs and insights of the communities we are working with, we can find the right solution to expand safe water access in the U.S. 

# How Indiana Addresses Water Loss with Audit Validation Program (A GLCAP Project)

## Managing Water Loss in Small Systems

By Vicki Perry, State Coordinator of Indiana, Great Lakes Community Action Partnership

**W**ater loss management is an important issue for water utilities, especially for small systems, whose customers are more acutely affected by the cost-of-service increases caused by system inefficiencies. With aging infrastructure, drought, and other issues increasing water demand and the cost of production, states are beginning to adopt mandatory water management measures, such as requiring the completion of a validated water audit.

A water audit is an inventory of all the uses of water in a system. The audit reveals how much water is “non-revenue” or “lost” by comparing the amount of water a utility produces to the amount of water it sells. Losses are categorized into two categories: “real” water loss, due to pipeline leaks, and “apparent” water loss, caused by improperly measured consumption and billing errors. Similar to energy audits, water audits identify and quantify inefficiencies so that utilities may take corrective actions, which ultimately lead to cost savings and further system sustainability.

However, these audit results are only as accurate as the data entered. If there is reasonable confidence in the validity of the data used, the audit results can be an effective tool for water loss control and planning. Water audit validation is a standardized way of identifying, correcting, and communicating inaccuracies in the water loss data and audit methodology. The validation provides a measure of quality control, documents uncertainties, and improves confidence in the accuracy of the water audit results (Andrews et al., 2017).

### Beginning to Evaluate Non-Revenue Water

In 2016, Indiana Senate Bill 347 required water utilities to submit a completed water audit to the Indiana Finance Authority (IFA). It would be the first step in the state’s concerted effort to quantify the amount of non-revenue water produced annually. The information gathered would help guide decisions regarding the future of the state’s drinking water resources (Indiana Finance Authority, 2016).

To facilitate compliance with the Senate Bill, IFA and partner organizations, including the Indiana Rural Community Assistance Program (IN-RCAP), offered a series of state-sponsored workshops across Indiana. The workshops included presentations on water loss management and on working with the required American Water Works Association (AWWA) M36 Water Loss Audit Software. RCAP Technical Assistance Providers (TAPs) assisted utilities as they completed their water loss audits during and after the workshops. It was the first time some systems had ever gathered water loss information.

Data compiled from the audits in the resulting legislative report showed that in 2015, over 500 Indiana water utilities, small and large, produced over 50 billion gallons of water that did not generate revenue, resulting in a loss of \$54.6 million (IFA, 2016, p. 17).

### Setting Standards for Audit Reliability

In 2019, the Indiana State Senate enrolled Act 4, which obligated all metered water utilities to complete water loss audits on an annual basis to further investigate the state’s non-revenue water. Additionally, in even-numbered years, the

completed water audits are to be validated by a certified third-party Level 1 Water Audit Validator. The IFA will then compile the resulting data into a biennial report, to be given to the Indiana General Assembly (Indiana Finance Authority, 2020).

Indiana is now one of only four states in the United States to require certified third-party validation of water loss audits. Georgia, in 2010, was the first to require annual validated water loss audits (GA SB 370, 2010). In 2017, to address ongoing water scarcity issues, the state of California followed suit (CA SB 555, 2015). Hawai'i's Water Audit Validation Effort (WAVE) program, established by Act 169, SLH 2016, requires all systems serving 1,000 or more people to complete annual Level 1-validated water audits. New Hampshire, Tennessee, Texas, Washington, and Wisconsin programs also incorporate AWWA's water audit software, terminology, and/or methods in their water audit requirements, but the audits are not required to be validated by a certified third party (Jernigan, 2017).

### **Creating the Validation Program**

Before the validations could begin, the state would first have to develop a certification program for the validators. The task was given to the IFA, which again partnered with water experts from a wide range of backgrounds to see the program to fruition. The Indiana Section of AWWA led the new team, which included CA/NV AWWA-Certified Validators from M.E. Simpson Co., Wessler Engineering, and the small-system-focused Indiana RCAP.

The resulting criteria for Indiana Certified Validators are as follows (State of Indiana, 2021):

1. Must have passed the Indiana Water Loss Audit Validator certification exam OR possess a valid water audit validator certificate from the CA-NV AWWA OR be a Qualified Water Loss Auditor in the state of Georgia.
2. To renew their certification, Certified Validators will be required to complete two water loss audit validations and two hours of Continuing Education Credits four years from the date of issuance OR eight hours of Continuing Education Credits four years from the date of issuance.

An Indiana-specific Water Audit Guidance Manual and two training series were created. One training, geared toward utility staff, covered the M36 Water Loss Audit Software and basic water loss calculations. The second training was devoted to validation of the audit data and a more in-depth look at the audit methodology in preparation for the Certified Validator exam. Previously certified validators on the team also provided input on the certification exam. A plan was created to ensure outreach to small systems for technical assistance during and after the training events.

The first dual training sessions were held in late 2019. Certification exams were administered following each two-and-a-half-day validation course. While the state was "shut down" due to a declared State of Emergency when the COVID-19 pandemic began, the team redeveloped the trainings to be delivered via a web-based training platform. The workshops eventually restarted in their new virtual form, and then transitioned to a hybrid in-person/virtual format once pandemic restrictions were downgraded.

The audit and validation workshops concluded in Fall 2020. Over the course of 14 sessions, 572 people attended the water audit training, representing approximately 280 utilities. Additionally, 224 completed the audit validation course. By the end of the training and exam series, there were 134 Indiana-Certified Water Loss Audit Validators available to validate the audits of over 500 metered drinking water systems.


Feedback from the sessions was positive. Tom Knapke, Town of Marshall, Indiana's operator, said of the workshops: "The Water Loss Audit training was very beneficial for me. The training received cleared up the definitions of the required information and provided the reasons the information was needed and how it would be used. The validator training was good because it went further into the calculations and the reasoning used in the audit. The validator training was more than just to keep the information on the correct line, but to set a level so all audits, when completed, would be 'comparable.'"

The next step would be helping all the utilities submit their validated audits before the deadline, which, due to the pandemic, was extended.

### **Providing Assistance for Small Systems**

During and after the training sessions concluded, Indiana RCAP provided technical assistance to utilities working through their water audits, and to new validators tackling their first validations. Additionally, a dedicated technical assistance phone line and email account were created. RCAP TAPs continue to work with small systems as they complete their audits and obtain validations, and outreach to small systems that have not responded is ongoing.

As a result, approximately 80% of the over 500 utilities that participated have submitted a validated audit or are on track to do so by February 15, 2021. The Indiana Finance Authority's legislative report on the state's non-revenue water is due in June 2021.

*The AWWA M36 Free Water Audit Software can be downloaded here: <https://www.awwa.org/Resources-Tools/Resource-Topics/Water-Loss-Control> *



# Tools for America's Water Infrastructure Act Compliance

Charlene Kormondy, U.S. Environmental Protection Agency, Office of Water, Water Security Division

**W**ater utilities today face unprecedented threats to the security and resilience of their systems. Drinking water utilities may be susceptible to a wide array of extreme weather events such as floods, droughts, wildfires, and winter storms that can damage treatment and distribution systems, disrupt power supplies, and potentially contaminate source waters. When disasters do occur, rural water systems serve as a critical lifeline for public health and the community at large. While responding to natural disasters can be challenging, you can take steps now to prepare your utility and community for future incidents.

**America's Water Infrastructure Act – Section 2013**  
One of the first steps to prepare for disasters is to conduct

a detailed assessment of your risks. America's Water Infrastructure Act of 2020 (AWIA) Section 2013 requires Community (drinking) Water Systems (CWSs) serving more than 3,300 people to develop or update a Risk and Resilience Assessment (RRA) and Emergency Response Plan (ERP). The law outlines what components must be included in the RRAs and ERPs and establishes deadlines by which water systems must send a certification of completion to the United States Environmental Protection Agency (EPA).

The certification deadlines are based on system population size reflected in the Safe Drinking Water Information System (SDWIS) as of October 23, 2018, the date when the AWIA was enacted. Compliance deadlines depend on the system size:

System Size	Risk and Resilience Assessment	Emergency Response Plan
If serving over 100,000 people	March 31, 2020	September 30, 2020
If serving 50,000 to 99,999 people	December 31, 2020	June 30, 2021
If serving 3,301 to 49,999 people	June 30, 2021	December 30, 2021



Within six months of certifying completion of the RRA, water systems must also certify completion of the ERP. The AWIA requires systems to consider factors such as monitoring practices, financial systems, chemical storage, and operations and maintenance in their RRAs. For the ERP, the AWIA requires utilities to include items such as strategies and resources to improve resilience and procedures to lessen the impact of malevolent acts or natural hazards. See the following webpage for more information and details about the AWIA - <https://www.epa.gov/waterresilience/americas-water-infrastructure-act-risk-assessments-and-emergency-response-plans>

### AWIA Compliance Resources

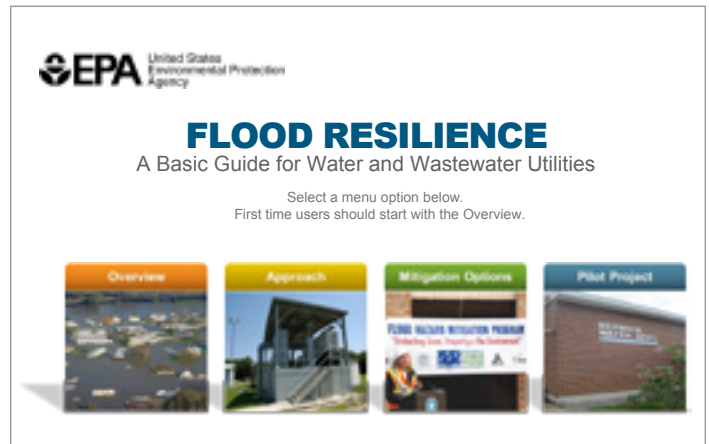
If CWSs need help meeting these requirements, EPA has several tools available to help systems develop their RRAs and ERPs. EPA does not require water systems to use these or any designated standards, methods or tools to conduct the RRAs or to prepare the ERPs. Rather, these tools are provided as optional support during the process:

- **Baseline Information on Malevolent Acts for Community Water Systems:** The information in this document can help systems identify and assess the likelihood of malevolent acts occurring at their water system as part of their RRA.
- **Vulnerability Self-Assessment Tool (VSAT 2.0):** VSAT 2.0 is a user-friendly tool that can help drinking water utilities of all sizes conduct an RRA.
- **Small System Risk and Resilience Assessment Checklist:** This guidance is intended for small CWSs serving greater than 3,300 but less than 50,000 people to comply with the AWIA requirements for RRAs.
- **Emergency Response Plan Guidance:** This template and instructions will assist water utilities with developing or updating an ERP in accordance with the AWIA.
- **How to Certify Your Risk and Resilience Assessment or Emergency Response Plan:** This webpage explains the three options available to CWSs for submitting certification statements and includes a training video on the electronic certification option.

### Other Resources


After completing an RRA and ERP, utilities can further explore how to lower risks and increase resiliency using EPA tools and resources. The Flood Resilience Guide provides practical solutions to help drinking water utilities respond to and recover from floods. The guide presents real-world examples of flood scenarios that rural water utilities might face and includes information on staffing, emergency response plans, funding, water supply and demand management, communications, and partnerships.

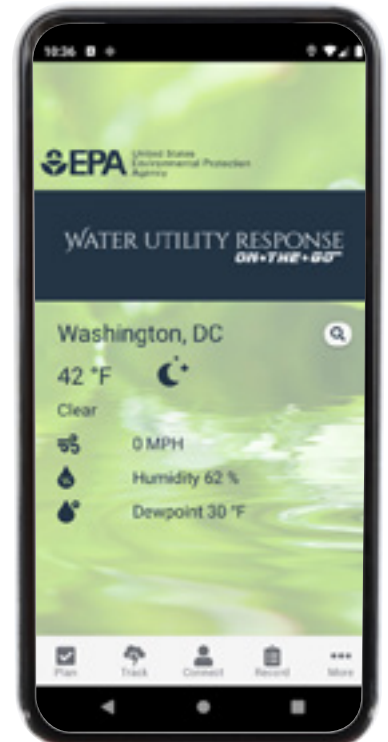
RCAP and AWWA collaborated to produce a comprehensive RRA template, which can be accessed here: <https://www.rcap.org/resource/rcap-awwa-small-systems-risk-and-resilience-assessment-worksheet-2/>. RCAP has also developed a 5-part self-paced e-learning series with AWWA for small systems that you can access here: <https://www.awwa.org/Professional-Development/Small-Systems#10954561-awia-small-systems-certificate-program>



The Water Utility Response On-The-Go (Response OTG) Application is an interactive tool allowing real time access to response resources to track severe weather, contact response partners, identify key response actions, and document damages.

Learn more about these and many other water utility resilience resources at: <https://www.epa.gov/waterutilityresponse>.

EPA provides regular updates on water security and resilience resources. To learn more, visit [www.epa.gov/waterresilience](http://www.epa.gov/waterresilience) or join the *What's Going On* newsletter email list by contacting [WSD-outreach@epa.gov](mailto:WSD-outreach@epa.gov). Use these free water resilience resources as you continue working toward providing safe and reliable services to customers during emergencies. 



# The Port Royal Water System, a Work in Progress

Andy Crocker, Virginia State Manager, Southeast Rural Community Assistance Project

**D**uring the summer of 2015, Southeast Rural Community Assistance Project, Inc. (SERCAP) became involved with a project in the town of Port Royal, VA. A town with rich historical ties, Port Royal is located along the Rappahannock River in Caroline County. At the time, the town pumped groundwater from two drilled wells to a 22,000-gallon elevated water storage tank which, in turn, supplied the town's nearly 100 customers with drinking water. The tank, obtained from nearby Fort A.P. Hill in 1967, replaced the original cypress wood tank (circa 1942) and remained in service until its demolition in late 2019.

During an inspection of Port Royal's water system, which included a drone camera inspection of the aforementioned elevated water storage tank in August 2013, holes in the tank's roof were discovered and a Notice of Significant Deficiency was issued to the town by the Virginia Department of Health Office of Drinking Water (VDH ODW). The notice required the town to submit a corrective action plan to ODW. The plan needed to address both the long-term need to replace the existing tank and the short-term need to implement emergency repairs to the existing tank. These repairs were required in order to stop contamination from birds and insects from entering the tank and contaminating the town's drinking water supply. It was not until the town had submitted the plan and committed to addressing both the short- and long-term needs that they began to understand just how long the process might take.

By the time SERCAP was asked to get involved in the project in April 2015, a preliminary engineering report and the design for a new tank and water supply system had been completed, but the holes in the tank roof and hatch had still not been repaired. Miraculously, no residents got sick from contaminated drinking water during the intervening period, even though turkey buzzards regularly roosted on the tank's roof. Since it had become clear that it would take at least another two years before construction of a new tank could be completed, SERCAP's first order of business was to procure a \$30,000 grant to fund the necessary roof repairs.

Up until that time, Port Royal's operation of the water system was similar to that of many small, rural utilities – not sufficiently funded through adequate water rates, no capital improvements plan, and no capital or operational reserves in the bank. They had never been educated on how to operate and manage a sustainable water utility, but the leadership was willing to learn and embraced the challenge of transforming their operation in order to rebuild their water system. Spearheaded by resident, Alex Long (who is now Mayor), the town began the arduous process of securing the necessary funding to replace the water tank, well house and control system, much of the underground pipe infrastructure, and to install water meters for each customer.

In addition to providing grant funding for emergency repairs, SERCAP provided technical assistance at the time by procuring a tank contractor to carry out the specialized repair work, inspect the rest of the tank and check the integrity of the support structure. These repairs, which took place in August of 2015, provided protection for the town's water supply during the time needed to procure funding and complete construction of the new tank and well house (a period of 3½ years).

The project required the collaboration of several funders, each of which played a critical role: the VDH ODW State Revolving Fund (SRF), the Virginia Resource Authority, USDA Rural Development, and SERCAP. In fact, the project collaboration was so successful, it caught the attention of the Association of State Drinking Water Administrators (ASDWA). ASDWA arranged for staff from the Environmental Protection Agency (EPA) Headquarters in Washington, DC to visit the town in July 2018 in order to see the construction site and to hear from all involved about how federal funds from EPA's State Revolving Fund were used effectively. The SRF provides utilities with grants and loans for projects through their individual state primacy agencies. These funds were leveraged through funding and technical assistance partnerships with VDH ODW, USDA Rural Development and SERCAP to create a success story for all parties involved.

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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.

As the new system was nearing completion and because the town's staff consisted of only a part-time bookkeeper and a part-time town manager, it entered into a contract with nearby Caroline County Public Utilities for operational and administrative (billing and collections) support. This sharing of resources between localities makes the town deserving of further recognition as it demonstrates how regional collaboration between utilities can be used to build additional capacity in small systems. In August 2019, the town celebrated the official inauguration of its new water system in a ceremony which was attended by all of the funding partners, residents, local dignitaries, State Delegate Margaret Ransone, and Congressman Rob Wittman. SERCAP received special recognition during the ceremony for the critical role the organization played in assisting the town throughout the process.

Since that time and as part of the town's continuing transformation, SERCAP was asked by USDA Rural Development and Port Royal to perform a rate study. To ensure the financial sustainability of the town and its water system, water rates were changed from a "flat rate" billing system (one in which everyone pays the same amount for water no matter how much they use) to a metered, consumption-based system that charges each customer for water based upon their home or business' actual usage. The study was completed in Spring 2020 and the new rate structure includes the funding of reserve accounts for debt service, operations and a new capital projects/improvements account. In addition, SERCAP assisted Port Royal with the development of updated water policies to accompany the change in rate structure and the establishment of the new capital reserve account, all of which were adopted by the town at a public hearing in late June 2020.

SERCAP's work with Port Royal, however, is not done. Work has already begun to collect data for a GPS/GIS mapping of the town's utilities. These results will be used in the development of an Asset

Management Plan. The plan will allow for the town to more fully understand the long-term financial needs for the water system and aid them in their future financial and managerial decision making. 🌊



Virginia Congressman Rob Wittman (R-01)



Virginia State Manager Andy Crocker with Port Royal Mayor Alex Long



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the stories  
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# A New Operator for Indian Creek Youth Camp

By Annie Chiodo, Community Environmental Management Specialist,  
Communities Unlimited, Communities Unlimited Communication Staff

**T**he Indian Creek Youth Camp is situated on the banks of Center Hill Lake, not far from Liberty, Tennessee. The lake is fed by the Caney River and is a popular recreational area in central Tennessee.

Indian Creek can accommodate up to 350 people. It is surrounded by permanent residences and vacation homes scattered throughout the surrounding hills. Unlike similar locations, the camp does not close for the winter. Instead, the cabins are rented out during the winter to vacationers. The camp operates its own water system, which also services the nearby residences. The camp is a surface water system that requires full treatment of the water it pulls from the lake.

The system was managed by Herb White for more than 20 years. Herb's duties were not limited to just the water system. He managed and performed maintenance all over the camp, so his time with the water system was often limited. In 2020, Herb decided he was ready to retire. He began working with his replacement, Ben Copely, and mentored Ben to take over all his responsibilities at the Indian Creek Youth Camp, a place Ben is very familiar with.

"I came here as a camper years ago when I was a kid," Ben said. "As a teen, I started working here with Herb White. I did maintenance one year, and one year I worked with the horses."

Ben had moved across the country, from Florida to Idaho, before Herb called him about the job at the camp. By that time, Ben had a diverse background in construction and maintenance, so he was the top choice to replace Herb. To take over all of Herb's responsibilities, Ben would need to become a certified water operator.

As the transition began, the water system received a state order from the Tennessee Department of Environment Commission (TDEC). The system was out of compliance because of a lack of proper testing and documentation. The state order noted that the system was not sampling regularly. It was not performing tasks related to the Long Term 2 Enhanced Surface Water Treatment Rule (LT2ESWTR) and Revised Total Coliform Rule (RTCR). The documentation for the water system was as outdated as the aging infrastructure. The standard operating procedures

(SOPs) were written on a whiteboard. There was no set sampling schedule and samples were not regularly taken. Source water assessments weren't performed. The water operator usually only visited the office once a month to complete paperwork and perform bacteriological sampling to monitor for the presence of coliform bacteria and pathogenic bacteria. As a result, the system fell out of compliance with state and federal regulations. Since the system is privately owned, it is challenging to find funding for repairs or upgrades, and consequently the system had not been updated since the year 2000.

It was suggested that Indian Creek contact Communities Unlimited (CU) for assistance in regaining compliance. Although CU was called to assist in addressing the state order and get the water system back into compliance, Ben said he was skeptical that such an organization could provide so much for no cost to the water system.

"I didn't believe it was true that someone could help decipher everything," he said. He checked with other nearby systems that had worked with CU and heard high praise from each one. Reassured, he was ready to meet the staff from Communities Unlimited.

Annie Chiodo, Community Environmental Management Specialist, took on the project. While discussing the issues with Herb White, Annie learned that Ben needed assistance in obtaining his water operator certification.

"I took the test the first time and failed it," Ben explained. "So I started again with her. Annie was very supportive, and she'd ask me questions and answered questions when I had them."

Annie began tutoring Ben and offered basic training to prepare him for his water operator certification class. Once he completed the required water operator course, Ben planned to take the certification exam again in May of 2020.

Unfortunately, COVID-19 forced the cancellation of the exam in May. The exam is only administered twice a year, so his next opportunity to take the exam would not be until November 2020.

"It was really disheartening to have that taken away," Ben said. Annie worked with Ben to keep his knowledge fresh and prepare for the next exam. Ben said he continued to study hard, even spending most of a family vacation studying. Ben knew the stakes.

"It's super important that I pass the test and that I deal with the state and not forget anything or mess up something," Ben said. "If I make a mistake, it could cost us."

The exam was held in November 2020 as scheduled, and Ben was able to take the test. He informed Annie that he had passed and is now a certified water operator. The certification paved the way for him to take over the water system and for Herb to retire in 2021.

After management and maintenance of Indian Creek fully transitioned to Ben, there was still a lot of work to get the water system back into compliance. One of the issues that needed to be addressed was the monitoring of the water source. Monthly monitoring of E. coli levels is required. If the E. coli levels exceed EPA specified concentration levels, Cryptosporidium monitoring is necessary. This type of monitoring requires a detailed monthly monitoring plan.

When Annie requested the plan from Indian Creek, she received a single page with the sample plan, maps of the system and collection points.


The system also lacked a cross-connection control plan. In addition, a Watershed or Source Water Protection Plan was required to describe the actions necessary to protect and enhance the source water through public education, watershed conservation, applying best management practices, or creating and implementing land-use restrictions. It outlines how to mitigate existing and future threats to the water supply.

Annie worked with Herb and Ben to develop a Corrective Action Plan to satisfy the state regulators. Annie guided them in creating a Cross-Connection Control Plan, a Sampling Plan, a Watershed or Source Water Protection Plan, and a Monthly Operational Report. The system also needed proper documentation of Standard Operating Procedures (SOPs). As COVID-19 swept the country, Annie provided personal protection equipment (PPE) to the camp's personnel through the Rural Community Assistance Partnership (RCAP).

"Annie made sure we had PPE," Ben said. "She got us some masks when no one else had them."

On January 1, 2021, Herb officially retired, and Ben became the official certified water operator for Indian Creek Youth Camp. Ben continues to work with Annie to create required documentation, set and execute a sampling schedule and update the water system's programs.

Ben praised the assistance Indian Creek has received from Annie and Communities Unlimited.

"What I love about Annie is she's always there to encourage you and keep you on track," he said. "For me, it's fantastic to have Annie [and Communities Unlimited] looking over my shoulder." 

# What Happens After the Project is Over and the Loan is Closed?

Jackie Luttrell, Technical Assistance Provider, Midwest Assistance Program

**T**he new water lines are in the ground and running the clearest water this town has seen in years. The new shiny water tower is up and glistening in the evening sunset with your town's name in a creative script and artwork to identify it to all who pass through. The residents' complaints about brown water are gone along with the old, corroded iron water lines. Everyone exhales a sigh of relief. Well, not everyone. The work of the Municipal Finance Officer, commonly referred to as the Clerk, is still going strong and will for the life of the loan that funded these improvements. This article addresses what really happens in the small-town finance office now that the grass is growing around the new curb stops. We will talk about how the use of surcharges ensures that loan payments are met and all the different funding requirements that may be imposed as a result of accepting state and federal funding.

Ideally the local government, especially the Clerk, was listening to their funders on what stipulations came along with the funding package for their new construction project especially since now the elected officials, guided by the Clerk, must ensure solvency of their new SRF or Rural Development long-term debt.

From my past experience as a municipal finance officer in the state of South Dakota, surcharges are one of the means of ensuring debt repayment. A surcharge is a flat fee that is charged to all the utility's customers to pay their share of the debt incurred for an improvement. If there is water service to a property, whether the water is on at the curb stop or not, the property owner is charged a

surcharge. There is an expectancy of the service to work when needed and having water access improves property value. Therefore, every service connection (commercial and residential) should assist in paying for said improvements. When you take out a loan to purchase a car, the car becomes the collateral for the loan. A surcharge is like the car; it is the collateral for the loan. Your loan's bond book will state how much of a surcharge will be imposed to be used for debt servicing. When setting a surcharge, a utility must carefully consider two things – how much does the surcharge need to be to ensure debt repayment and when does the surcharge need to start being collected.

During the planning phase of any large construction project, the engineer and funders calculate how much the project will cost, how much of the project costs will be funded by grants, how much will be funded by loans, who the funding agencies are, and, if funded by a loan, when the loan repayment will begin. If the project construction time is measured in months, it is important to remember that interest starts accruing on a loan as soon as funds are drawn. Before the monthly or quarterly payments begin, the utility will have to pay off the accrued interest using the in-place surcharge revenue. For example, by the time a utility has drawn down on a \$2.5 million loan over several months (or even years), the accrued interest could be \$50,000 or more. Have your surcharges in place early enough to ensure that this payment can be satisfied. Then the surcharges need to start accumulating to ensure that the first and each consecutive loan payment is properly funded by the surcharge.



Answer these few questions to get started on calculating the amount of a surcharge: How much is the anticipated loan payment (principal and interest)? How often will payments be due (monthly or quarterly)? How many users will be charged this fee? Let's use an example of an SRF loan payment of \$25,000 due every quarter for a system with 640 users. Just to cover the loan payment, the utility must charge each user at least \$13.02/month.

$$\begin{aligned} & \$25,000 \text{ payment} \div 3 \text{ months} \div 640 \text{ users} = \\ & \$13.02/\text{month minimum surcharge fee} \end{aligned}$$

If you have non-residential high-use customers, you may wish to charge them a higher surcharge, which is typically based on the meter size.

Your funder may also require the utility to set aside one payment in advance into a reserve account as another means to ensure debt repayment. Does your utility have late payers or uncollectable accounts? Of course, every utility does. You will need a buffer to cover them. Collecting these fees is crucial for repayment. If you do not already have a collection policy – make one and follow it.

All these funds are to be held by the utility in an interest-bearing account until the loan has been paid back in full. The utility bill to your customer should label the surcharge with a name that identifies the project/debt (i.e., Water Tower Surcharge) and the amount of the surcharge. When collected, this fee should be recorded separately to a designated revenue code identifying it as reserved money to pay down debt and recorded as an asset on the balance sheet as restricted funds (to be used only as designated). One system could have multiple debt service accounts for all the different funders for all different projects over the years. Good record keeping is extremely important because there are very few Clerks that stick with the job until the debt is paid off in 30 years!

After a few months of loan payments, review the surcharge fee to make sure it sufficiently covers the debt service. Do you have enough surcharge revenue to make loan payments? If you feel it needs to be adjusted, either up or down, you must get approval from the funding agency first. I had a project that had unforeseen weather delays during construction and the total project cost was overestimated by over \$1 million! I worked with the funder for approval to reduce the surcharge and paid off an extra \$100,000 toward the loan from the surcharge reserve. That is by no means the norm, but it goes to show that there are a lot of variables to consider when setting a surcharge and that it is not an exact science.

Now that the surcharge amount is set, we also need to revisit the usage rates to ensure that any other loan


Small water systems borrowing money for critical infrastructure projects have several options to generate the revenue needed to repay debt. Many communities use debt surcharges successfully, as is outlined in the article. Other communities have found success by rolling the cost of debt into their base rate, volumetric rate, or both. Each repayment approach can impact the bills of various types of customers differently. We recommend that utilities consider how rate increases for debt repayment will change the bills of customers at many different levels of usage, paying particular attention to the effects on low-use and high-use customers.

obligations are met. A rate covenant is a provision in a municipal revenue bond that requires that the rates are adequate to cover ongoing maintenance and repairs of said facility. Generally, the utility will need to show that their revenue exceeds at least 110% of the operating expenses.

Another reserve that may be required by a funder is money set aside to replace or repair components of the facility which is being financed, known as a short-lived asset. Short-lived assets have a useful life significantly less than the repayment period of the loan. This dollar amount is set by the board during the planning phase and is written into the revenue bond. The Clerk must remember to budget for this reserve allocation every year and keep track of its balance. Although required by the funder, the utility does not need the funder's permission to spend these funds when used properly – replacing a key component such as a master water pump, for example.

Another reserve, Operations & Maintenance, is one month's worth of the expenses set aside to ensure ongoing operations. Again, tracked as an asset on the utility's balance sheet.

Funders will require yearly compliance reporting from the Clerk as agreed upon in the funding package and copies of their audits performed by an independent accounting agency. When used properly, an auditor can be the Clerk's best friend to assist in setting up these reserve accounts and their ongoing maintenance.

Unfortunately, many small-town Clerks do not have the bookkeeping background or the spare time to perform these reporting requirements. And that is when we, as Technical Assistance Providers, may be asked to step in to assist. I hope this brief explanation of all that happens after the construction ends gives you a glimpse of the work that faces the Clerk. Just because the loan is closed does not mean the work of the Clerk stops. The Clerk's job is never done. 

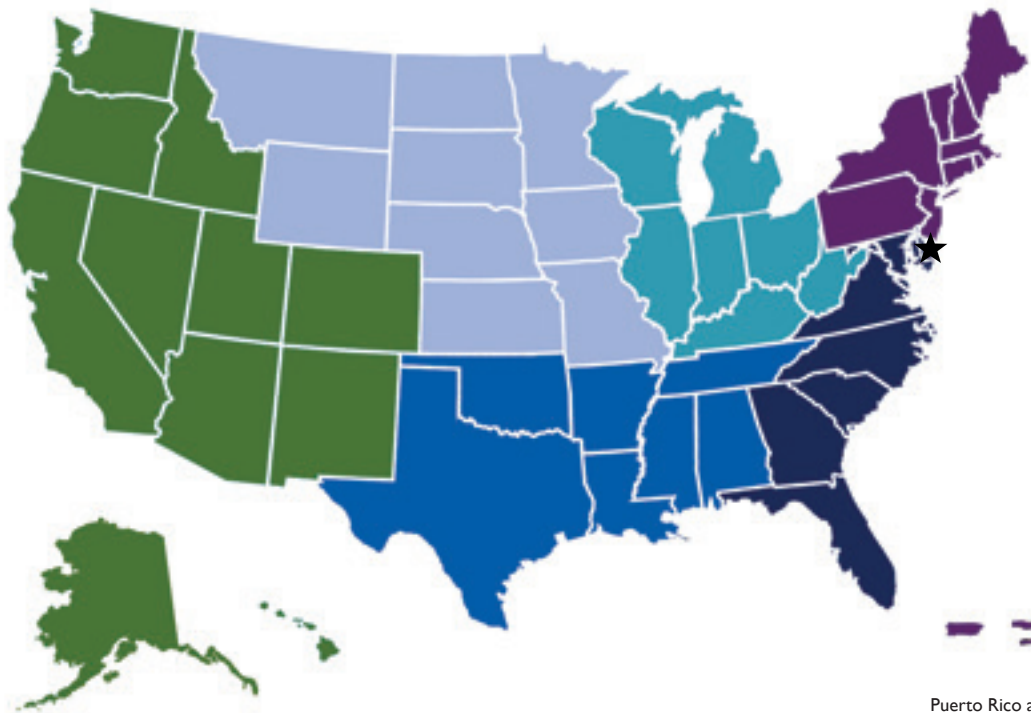
# Upcoming Events & Trainings

SPONSOR	EVENT	DATE	EVENT DETAILS
<b>Southeast Rural Community Assistance Project (SERCAP)</b>	Developing a Water Conservation Plan	May 20, 2021	This session will be offered at 10:00 a.m. and again at 1:30 p.m. It will cover the development of a Drinking Water System conservation plan from start to finish, following the SERCAP guidebook adapted from the EPA guidebook, "Water Conservation Plan Guidelines," Basic Guidelines Part 3; Topics covered will include conservation goal identification, compiling a system profile, identifying and evaluating conservation measures, and estimating future demand. Visit <a href="http://www.sercap.org">www.sercap.org</a> for more information
<b>Environmental Protection Agency (EPA)</b>	AWIA Risk Assessment and Emergency Response Plan: Review and FAQs Webinar	May 20, 2021	This webinar will review key topics and answer attendee questions from previous America's Water Infrastructure Act (AWIA) workshops, webinars, and presentations. Please attend this webinar if you have questions regarding AWIA. This will be especially helpful for community water systems that have started to complete or update their risk and resilience assessments (RRAs) and emergency response plans (ERPs)! In addition to hearing from EPA, attendees will also hear from a small-sized community water system, the City of Moab, Utah, who will share lessons learned from their experience preparing their RRA. Register here: <a href="https://register.gotowebinar.com/register/6764258620689464080">https://register.gotowebinar.com/register/6764258620689464080</a> .
<b>Communities Unlimited (CU)</b>	Small System Emergency Management Training	May 27, 2021	This class will provide emergency management training for small water system personnel. The session will focus on emergency preparedness and management. Register by visiting CU's website.
<b>Great Lakes Community Action Partnership (GLCAP)</b>	Water Audits	July 19, 2021	The learners will be given all the necessary information to address water loss using the Water Audit as a tool. Points of emphasis will include the following. Avoiding the use of the old terminology "unaccounted for water" and using the new terminology - "Revenue vs. Non-revenue Water". De-emphasize the use of percentage indicators. The 3-V's: Volume, Value, Validity and that the water audit should be considered a Best Management Practice. Register here: <a href="https://bit.ly/3tPH61q">https://bit.ly/3tPH61q</a> .

For more events and trainings, visit [rcap.org/training](http://rcap.org/training) and [wateroperator.org](http://wateroperator.org).

# Rural Community Assistance Partnership

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Puerto Rico and USVI  
(Northeast & Caribbean RCAP)

## Western RCAP

Rural Community Assistance Corporation (RCAC)  
3120 Freeboard Drive, Suite 201  
West Sacramento, CA 95691  
(916) 447-2854  
[www.rcac.org](http://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](http://www.map-inc.org)

## Southern RCAP

Communities Unlimited  
3 East Colt Square Drive  
Fayetteville, AR 72703  
(479) 443-2700  
[www.communitiesu.org](http://www.communitiesu.org)

## Northeast & Caribbean RCAP

RCAP Solutions  
191 May St  
Worcester, MA 01602  
(800) 488-1969  
[www.rcapsolutions.org](http://www.rcapsolutions.org)

## Great Lakes RCAP

Great Lakes Community Action Partnership  
P.O. Box 590  
127 S. Front St., 2nd Floor  
Fremont, OH 43420  
(800) 775-9767  
[www.glracap.org](http://www.glracap.org)

## Southeast RCAP

Southeast Rural Community Assistance Project (SERCAP)  
347 Campbell Ave. SW  
Roanoke, VA 24016  
(866) 928-3731  
[www.sercap.org](http://www.sercap.org)

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