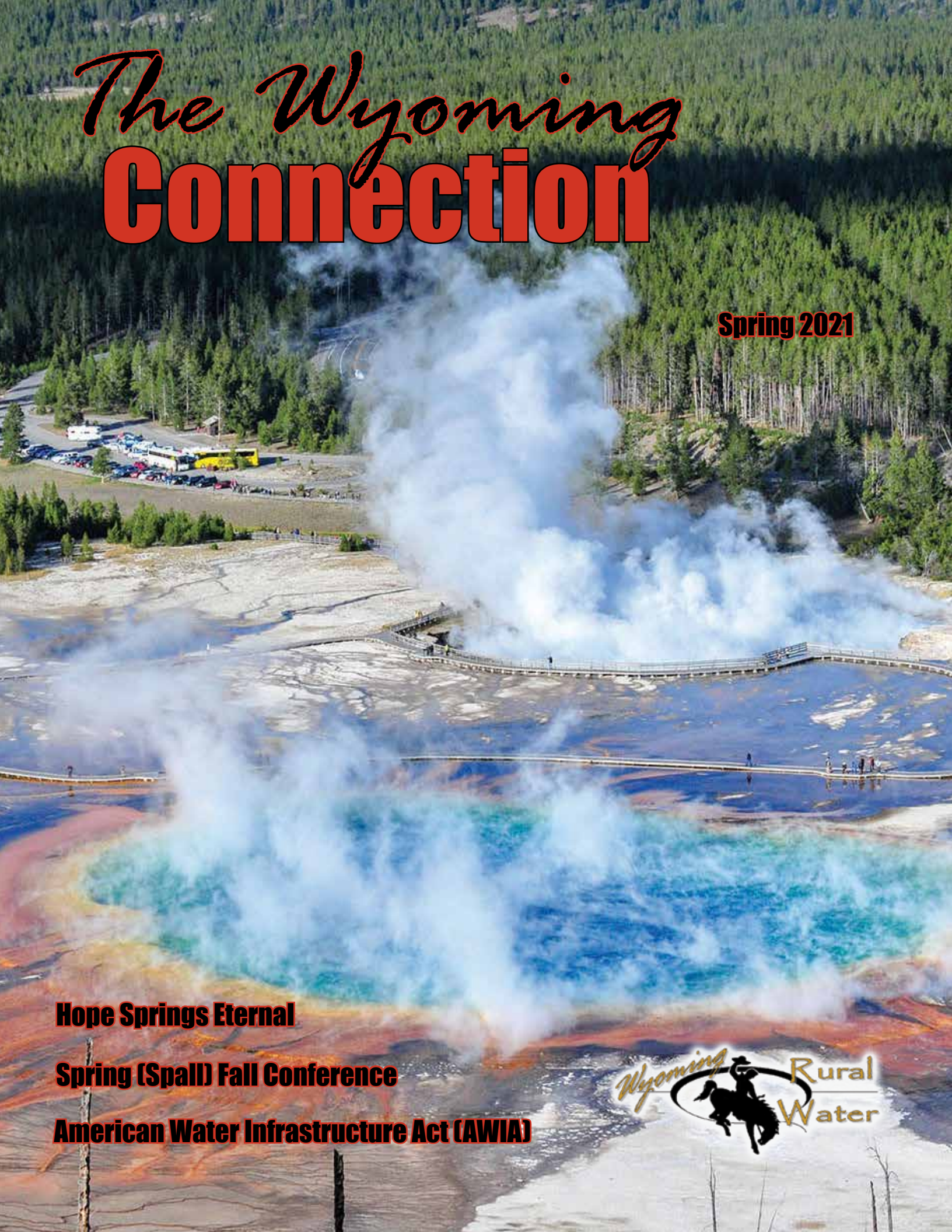
The Wyoming Connection

Spring 2021



Hope Springs Eternal

Spring (SpalI) Fall Conference

American Water Infrastructure Act (AWIA)

Wyoming Rural Water

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Spring 2021- - Issue 121

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Wyoming Rural Water

Contents and Features

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Wyoming Association of Rural Water Systems is a non-profit association that provides on-site, one-on-one technical assistance and training to small municipalities under 10,000 population and all water and wastewater systems throughout the state. Equal Opportunity Provider.

Cover Photo – Grand Prismatic Springs in Yellowstone National Park. Photo from Google Images.

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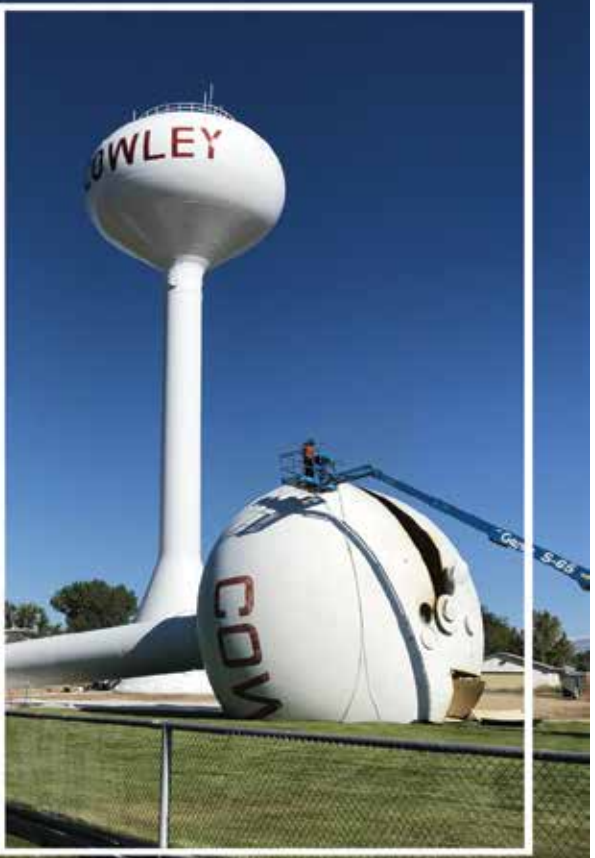

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A Note From Mark Pepper

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Hope Springs Eternal

As I write this, we have just gone through a pretty rough patch of winter weather. February was one of the coldest months on record in most of Wyoming (and that is saying something). Although, it was far from our "coldest" February on record. A few weeks later and we received almost record snow with some areas of the state receiving record 1-day amounts but generally a large portion of the southeast/central area (North Platte drainage) received about 30+ inches over 2-4 days with most of it in a 12-hour period. It was a great snow for moisture with it being a heavy spring snow. We are in a drought and this snow certainly helped, now we just need 3 or 4 more before just like this before the end of April and we should be about caught up!!!

In most areas, the amounts cracked the top 5 all-time but that means we had 3 or 4 larger snows over the many years. After 4 straight days of near 50-degree days, we still have 8 ft drifts and piles everywhere (down from 12 ft). My next chiropractic adjustment is just a couple days away to hopefully rearrange my back from digging out of the mess. Wyomingites are starting to get out and do what we do best, live in the outdoors, meet our neighbors and get back to living in general. The Central part of the state recently hosted the High School State Wrestling Championships; State 1A/2A – 3A/4A Basketball Championships over 3 straight weeks. Spectator crowds were limited to no more than 2,000 at any event session. With about 15% of the state having either had Covid and about the same percentage have received their vaccines, we will see how the numbers look by the end of March. As of mid-March, we hover around 500 active cases statewide with 693 deaths reported.

Our staff is getting back out and about more than we were able to during the pandemic period, operators are gearing up for spring thaw and delayed maintenance is being planned to catch up. We have been able to continue virtual training and have held 8 virtual sessions for continuing education during February and March with nearly 500 manhours of training received. We were able to hold a virtual 2-day training in January and will have a 2-day virtual mini conference in April. Our Annual Training Conference will be held in person in late August (hopefully).

We have added Sun Coast Learning online classes to our training mix to help operators meet their continuing education hours while helping reduce operating budgets for travel. It can be accessed on our web site under the 'Training' tab, then click on 'Current Training & Info' and scroll to the bottom of the page.

As I look out my office window at the large snow piles on this one of the first days of spring, all you can say is really!!! I guess this is what springtime in the Rockies looks like!! Looks like sunny days and about a 30% chance of more snow all this week. I'm thinking my chiropractor teamed up with Mother Nature so they could afford a new 4 Wheel drive!! Mr. P.

WARWSDOKU

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American Water Infrastructure Act (AWIA)

This is not the article I had planned to write for the Spring Connection. But you know the old saying, "Man plans and God smiles." In the last couple of weeks, I have received an alarming number of calls from systems that are not familiar with the American Water Infrastructure Act (AWIA). It was passed by voice vote in the US House in 2018 and voted out of the Senate 99 to 1. It was a truly rare show of bipartisanship and it was sponsored by Wyoming's very own John Barrasso. It is a sweeping act that addresses everything from irrigation systems to sediment management for federal reservoirs. The Community Water System Risk and Resilience Assessments are the provisions and requirements that this article is going to focus on. You need to know this!

AWIA requires community water systems serving more than 3,300 people to develop or update risk assessments and emergency response plans.

For systems over 100,000 in population they were due March 31, 2020. Systems with populations over 50,000 but fewer than 100,000 were due by December 31, 2020. We had three systems that met that population requirement. There are 31 community systems that must meet the next deadline for systems fewer than 50,000 but greater than 3,330. Those systems must certify their Risk Assessment to EPA by June 30th of this year. If you are not sure if you are one of those 31 systems, call Kyle St. Clair or me. Kyle is the Water Security Coordinator for Region 8 EPA and he is great to work with.

Do not try to ignore this requirement. It will not have a good end and even if there was not a requirement, you should want to protect your system and plan for the unknowable. I am betting the water systems in Texas that do not meet the 3,300 threshold are wishing that they had a risk and resiliency plan about now. I am encouraging all Wyoming systems to do these plans whether you are required to or not. Eventually, I am convinced, all systems will be required to do the assessment and planning, but even if that never happens it will only make your system more sustainable and stronger to have done an assessment and an updated emergency response plan.

So what has to be in one of these risk and resilience assessments? Community water systems serving over 3,300 people must assess the risks to and resilience of specified assets to malevolent acts and natural hazards. The assessment should address the following:

- Physical barriers
- Source Water
- Pipes and constructed conveyances, water collection and intake
- Pretreatment and treatment
- Storage and distribution facilities
- Electronic, computer, or other automated systems (including the security of such systems)
- Monitoring practices
- Financial Infrastructure
- The use, storage, or handling of chemicals
- Operation and maintenance of the system

It also might be helpful to include an evaluation of capital and operational needs for risk and resilience management.

Remember the vulnerability assessments that systems did way back when? They were good, but these risk assessments are better. The risk assessment looks at possible threats, how likely those threats are to occur, and how vulnerable your system would be if the act occurred.

Not all threats are equal in their possible occurrence or their consequences. Your challenge here is to identify those threats that are most likely to happen with severe consequences to your system. There are two different types of threats that need to be assessed; malevolent acts and natural hazards.

Malevolent Acts

- Assault on Utility – Physical
- Contamination of finished water – accidental or intentional
- Theft or Diversion – Physical
- Cyber Attack on Business enterprise or process control
- Sabotage – Physical
- Other

Natural Hazards

- Flood/Drought
- Earthquake
- Tornado
- Ice Storm/Blizzard
- Wildfire
- Other

There are forms, as well as several computer platforms that can help you complete the risk assessment and meet EPA

Requirements. The paper forms help you do a qualitative risk assessment by identifying high risk threats, vulnerabilities, and consequences. It does not estimate the risk value. Countermeasures may be identified, and the benefits described but not estimated. Paper analysis does not give you the level of detail that using a computer program will, but it is considerably easier and requires minimal resources to complete.

There are several computer platforms that can be used. All of them do a quantitative risk assessment that estimates threats, vulnerabilities, consequences, and monetized risks. Countermeasures may be quantified for cost, risk reduction and cost-benefit analysis. EPA's computer model is VSAT (Vulnerability Self-Assessment Tool). Whether you use VSAT or another computer platforms, it will require significant time, information and resources to complete.

EPA does not want your assessment. You only must certify that the risk assessment is complete and meets the requirements of AWIA. There are several ways of submitting your certification, but EPA strongly recommends that you electronically submit your system's certification statements. One of the great things about submitting your certification electronically is that you will receive an acknowledgement of receipt of your certification statement.

Once you submit your risk assessment the clock starts ticking. Your system has 6 months to submit a certification verifying the completion or updates of an emergency response plan that meets the requirements of AWIA. Next Connection we will address how to develop a compliant Emergency Response Plan. Do not put this stuff off. Time has a way of slipping by and the next thing you know a deadline will be looming before you. Don't hesitate to call me. WARWS can help.

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Leak Detection

Recently, when visiting with a small water system's Operations Specialist, water loss soon became the main point of our discussion. The operator showed me that the run time of the small surface water filtering plant had increased over the past 10 days and production showed an increase of around 15,000 to 20,000 gallons per day. Now, for a lot of systems 15 to 20 thousand gallons isn't very much, but to this small system with only about 75 taps (customers) this is huge. The operator had started looking for water surfacing but had hadn't found anything yet. This didn't surprise me as it was still the middle of winter and with the frozen ground (3 to 4 feet thick), it would take time for the water to find a path to the surface if it didn't find a gravel seam or an abandoned water or sewer line first.

The first thing we look at is how much water is being lost or how big the leak we are looking for is. This is important as trying to find a leak that is 5 gallons per minute or less is very difficult and time intensive when you're trying to do this yourself.

In this instance, a quick calculation of the above normal production rate was somewhere in the range of 10 to 15 gallons per minute. The first thing what came to my mind was that this rate of flow is close to that would go through a 5/8 X3/4 inch water meter at the normal pressure of 55 to 60 psi in the distribution system. My questions to the operators were if they knew of any houses that were vacant or no one at home over the past couple of weeks where the service would still be on. This amount of flow could be from a broken water line in a house which would be close to the lower end of our estimate.

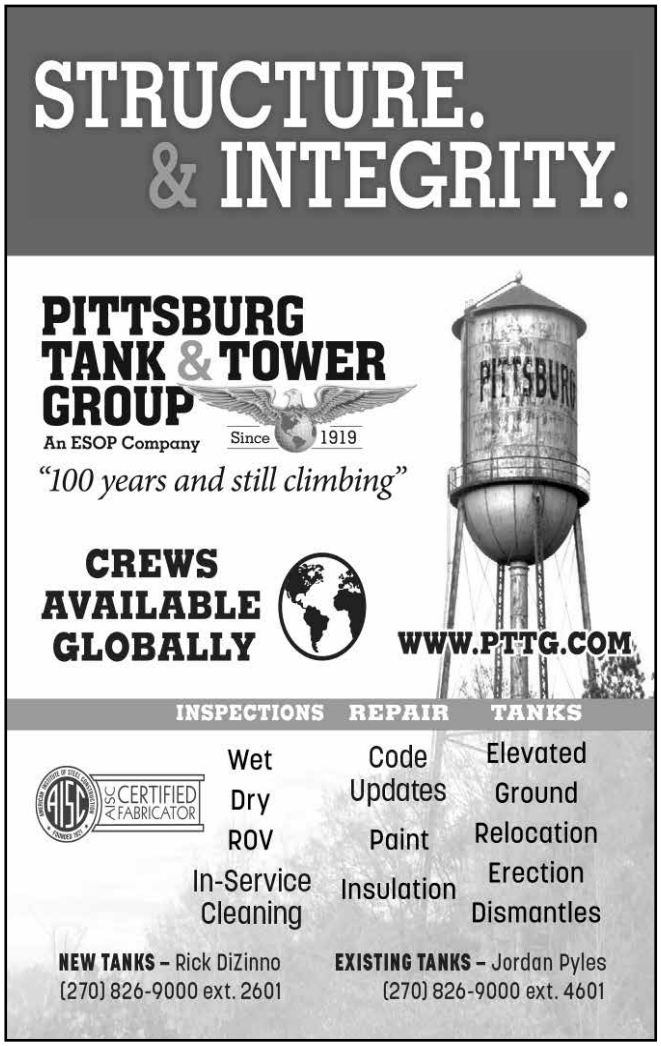
The operator indicated that it would only take a couple of hours to go through and read the meters in the small system and that would be where they would begin. As luck had it, before the operators could begin reading the meters, a request was made to have the water turned off to a rental property because of a water leak. When the meter was read, the rental unit had used 133,000 gallons of water in about a 10 day period or usage at the rate of 9.3 gallons per minute. Pretty close to what we estimated.

As I mentioned, I like to know the size of a leak, water loss or unaccounted for water that I'm looking for and that water loss under 5 gallons a minute is very difficult. A system could have several small leaks or seeps that could add up to 10 gallons per minute adding to the difficulty.

In cases like this I like to have the operators begin with checking all the hydrants in the systems. Hydrants in cold weather areas have a "weep" or drain hole that is exposed when the hydrant is off. It is common for an old hydrant to allow water to seep through after flushing and a couple of gallons a minute or more of a seep will drain out the bottom of the hydrant under pressure if the caps are replaced tight.

The next area in looking for small gpm water loss is in any area that is supplied with water that is not metered. Communities often have small parks or playgrounds with a restroom that is not metered. A toilet fill valve that doesn't shut off or a urinal that is stuck open can lose two to three gallons or more per minute. Yard hydrants or hose spigots in parks are notorious for losing water.

Although we at WARWS can help with our surface listening mics, there are times when the professionals need to be called in. The professionals have different types of equipment that



we at WARWS don't have nor can we afford. In Wyoming, when one of the professional leak detection companies are called out it will cost around $1,000.00 or more per day depending on equipment used. In addition to the acoustic listening device that I use, these companies have correlators that can listen for sounds in the mainline between valves to even injecting helium into the line and using a sniffer to find where the helium comes to the surface. I've seen helium used on small leak detection and was impressed. Unlike water looking for the easiest way to flow, helium, or other gases used will rise to the surface near the leak and is detected by a "sniffer" calibrated to the gas being used. Again, this is not cheap and a lot of prep work has to be done to isolate the area of the line the suspected leak might be before the injection of a gas.

Before you call in the professionals, you can save time and money by isolating the area first. This is best done during the early hours of the morning when water demand is the lowest. First chose an area to start with and you're going to isolate an area between mainline valves.

The first step is to educate your customers in this area that they will be out of water for a short period of time and when that will be.

Second, go through the area and close all curb stop valves. I would recommend that you to go through and find all these valves and check that they all work first.

Third, you will need to be able to monitor the pressure in the mainline in this area when you shut off the mainline valves that supply this area. I like to choose one service valve to leave open and install a pressure gauge on the outside hose bib. Sometimes a reliable location is not available (and I don't like using a fire hydrant because of the seep hole in the bottom) to install a pressure gauge so I will close all valves, wait at least 30 minutes and then very slowly open one of the mainline valves. Keeping my ear close to the valve key, I listen for the sound of water rushing past the valve. If the sound last longer than a moment, I have found the area where water loss may be occurring. If the sound is only momentary, the leak I'm looking for is not in this area.

If you can install a pressure gauge, leave all valves closed for 30 minutes and monitor the pressure. At first pressure may drop a few pounds and then hold. This is to be expected. If pressure is maintained then your leak is not in this area. Open all the valves slowly that were closed beginning with one of the mainline valves and move to the next area you suspect.

By doing this, you will eliminate areas that don't need the time and cost of hiring the professional saving money. If you haven't been keeping up on your valve exercising program, the older valves may not seal completely and allow water to continue to flow past the valve masking any small leaks in the area.

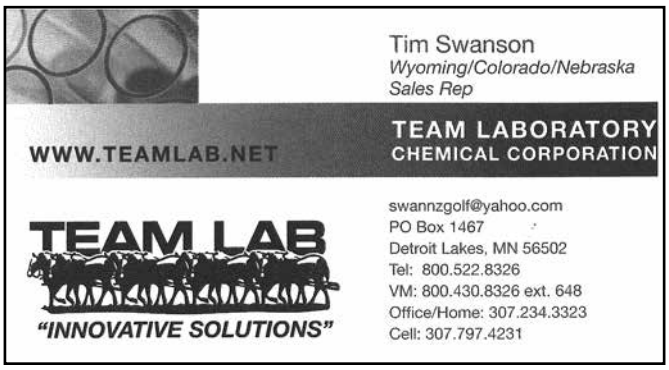
There are quite a few systems in Wyoming that budget to have professional leak detection done on a different section of their distribution system every year, particularly those systems that purchase water from another system. Just think about it, if your system purchases water for say $2.00 per thousand gallons and you have a series of small leaks that don't surface at a combined flow rate of 5 gallons per minute, then your system is losing about $14.00 per day, $420.00 per month and $5,040.00 per year. For that amount you can get a good size area of your distribution system tested finding the small leaks before they become large and expensive.

Using the example at the first of the article we estimated 15 to 20 thousand gallons per day of extra production or water loss. The formula is simple: 15,000 gallons (one day water loss) divided by 1440 (mins. in a day) = 10.42 gallons per minute.

Because the Water Operations Specialist in this example stays on top of water production, she was alerted to a problem existing somewhere in her system. Knowing what your historical daily water production is during the different months or seasons of the year will alert you to these kinds of problems. With more and more systems, even the smallest of systems using computerized data collection, heading off problems before they get large is at our finger tips. We just have to stay on top of the data being provided. If we are relying on the computer to alert us, too often the problem is bigger than it could have been.

A benefit our customers here in small town Wyoming should have is the Operation Specialists know and pay attention to historic water use of our customers helping them to identify potential problems early on before complete water service is lost.

Again, when looking for a leak, knowing the amount you're looking for in gallons per minute eliminates a lot of time before you even begin looking.



A Note From

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Spring is in the Air

Traveling around the great state of Wyoming is always a never ending joy. Many towns I've had the pleasure of visiting are starting to get Spring fever. This winter has not been as bad, as far as some Wyoming winters have been for sure. In some parts of the state, even during late January, it almost seemed like Spring was already here. I ran into rain in the great little town of Meeteetse one fine evening heading into the Cody area. In the back of my mind, I was thankful it was not snow. That would have been a snowstorm that would have postponed the trip for sure. By the time I hit Cody, the reality that winter is still here became evident as those snows snake crossed the road.

Now that February is almost behind us, those pesky Spring to do lists are upon us. I recently visited one system that has a list a mile long. This small system lost a long time operator, who kept all his records in his head. Now a new hire has been thrown in the deep end, to figure things out as he goes. This may sound familiar to some of us who may have been there done that. I have seen this a lot visiting the NCNT systems that have a very high turnover rate. This was especially true in all the issues that 2020 put us through. As more and more operators are closing in on retirement age, this may become wide spread across our state.

I have worked with a lot of small systems, and one area that keeps coming up is a good O&M manual. I have seen both sides of the coin, so to speak. Some towns have their O&M listed out for every season, and seem to do very well overall. Others haven't updated their O&M manuals in some time. Then in a few cases the new operators could not even find them.

The WARWS web site has an easy to use template that can be downloaded for a great start. I'll be heading to a few systems this spring to help map out all their gate valves and curb stops. Many valves in one system were buried when they redid the gravel road. It is very likely that some of these haven't been exercised for quite some time. After all, if a new hire does not have an updated map showing where they are, chances are very high he is not exercising them, let alone knowing how to shut them when an issue comes up. We will also bring them up to grade and replace/ repair the ones that have been damaged along the way.

The O&M manual is also a great tool for making a comprehensive list of the inventory a system has on hand. As many towns across the state cut budgets across the board, critical parts still need to be on hand when issues arise. Using a list to prioritise the need for certain items can be a useful tool come budget season in council meetings. Some systems have been devastated by layoffs, and jobs leaving all together from their communities. However, systems still need to budget for the most critical parts, and of course water/ wastewater testing.

I recently came across a system with a very bad case of iron bacteria that infested their well. Thanks to the operator doing a good job on his O&M, the system did have money set aside to treat the well and get it back on line. This made the operators job very easy, when he went to the Mayor needing the funds to get the job done right.

As the weather does start to warm up, the frost is coming out of the ground in some areas. That is as long as they were lucky enough to have enough moisture in the ground to even have frost this year. As fate would have it, I've been on a couple of call outs already for broken water mains. Yep, back to having a updated map of your system again. The one system had maps and a valve exercising program in place. The other I'm thinking about had a very basic old map with some hand written notes. I'll let you decide which one was very easy to isolate the main. Thanks to Mark Pepper, WARWS now has new leak detection equipment available if any system needs assistance finding those dreaded water line breaks.

Spring is just around the corner, as systems gear up for the upcoming year take a minute to dust off your O&M manual, and see if any changes need to be made. As always stay safe, and have a great 2021.

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Secondary Biological Treatment (Part 3.5)

Activated Sludge Settling Problems

Poor settling is one of greatest challenges with an activated sludge plant. It can occur with both young and old sludge alike. Determining the cause or causes of poor settleability of activated sludge involves investigating the biological, chemical and physical factors.

Biological Considerations

First let's begin with the biological aspects that may hamper settling. You will want to determine the F/M ratio, BOD loading, MLSS concentration and the sludge age. With this information, you will compare to the recommended normal operating values for your particular system. Keep in mind however that at times, you may find that your system runs better when it is not within the normal operating values. Only time will tell what works best for a particular system. The next step is to conduct a microscopic examination and visual observation of the settling characteristics. The MLSS can reveal filamentous growth and poor floc quality. Nitrification/denitrification is evidenced by rising sludge.

Chemical Considerations

Now let's consider the chemical factors that can cause poor biological growth. These include insufficient dissolved oxygen, lack of nutrients, presence of toxins and low temperature.

Laboratory testing is a must to establish the adequacy of dissolved oxygen in the system. Since lowering the temperature of the mixed liquor decreases the rate of biological activity, cold temperature has an effect similar to increasing the BOD loading. The dissolved oxygen levels can in the aeration basin can also be reduced due to excessively high organic loading or from a reduction in the capacity of the aeration equipment.

Physical Considerations

Let's not fail to consider the physical characteristics of the aeration system as well as the final clarifier. Excessive agitation do to long detention times or overly aggressive mechanical mixing, can cause shearing of biological floc into tiny particles which will reduce the efficiency of settling. If diffusers become plugged, it will greatly reduce mixing as well as oxygen transfer. Often times, diffusers become plugged from excessive grit. This is why it is so important to properly maintain your grit channel at the front end of your treatment plant.

In addition to excessive grit, the grit could contain organic material that can cause anaerobic conditions. This will result in a higher dissolved oxygen demand which will deteriorate the sludge quality. To add fuel to the fire, a reduction of oxygen transfer can cause the sludge to become stressed and will respond as old sludge not properly settling.

Ineffective final clarification result from an inadequate rate of returning sludge, excessive overflow rates, hydraulic turbulence or a faulty sludge collection mechanism. In the event of excessive flows, the solids in the aeration basin can be pushed into the clarifier and washed out over the weirs. This will result in depleting the MLSS and a poor effluent quality. The reduction in sludge age could be enough to produce young sludge which will not settle properly and a large volume of white foam will form on the aeration basin.

There is one area that is difficult to control and that is the development of filamentous microorganisms. Filamentous organisms grow as long, thread-like organism having an increased surface area. This increased surface area makes it possible for the filamentous organisms to grow in conditions of low dissolved oxygen or nutrient concentrations. These conditions are common when excessive FOG enters your system. You will especially notice the filamentous difference at mechanical systems like ski resorts. During ski season, the place is hopping and restaurants are serving lots of meals. Unless properly controlled, lots of grease reaches the treatment plant. After the resort slows down for the season with little to no restaurants open except for special events, the grease and the filament issues are gone until the next season. Unfortunately, with filaments, they hinder settling by causing excessive bridging and matting of the individual particles of the activated sludge floc.

Process control balance is generally related to process loading and is expressed by the food to microorganism (F/M) ratio. Inability to settle the mixed liquor can result in high concentrations of suspended solids in the clarifier effluent. Proper control of the activated sludge process will produce a mixed liquor with a good settleability.

A properly operated activated sludge plant should have:

- ✓ MLSS around 2500 mg/L.
- ✓ Dissolved oxygen of 1.0 to 2.0 mg/L in the aeration basin.
- ✓ Settleometer that settles to approximately 1/3 of its volume in 60 minutes.
- ✓ Return rates of 30 to 100% of influent.
- ✓ A light brown color in the aeration basin.
- ✓ No objectionable odors.
- ✓ A clean, crisp appearing effluent.

A Note From
Johann Nield
Circuit Rider
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307-751-1138

Revised LCRR Questions?

What is the difference and when will it become effective in Wyoming?

During my adventurous travels around the state over the last 3 months, the question about the new rule has come up during our conversions. I addressed the original LCR rule in a previous article. So now that the revised rule has become finalized, I feel I need to provide the following information. This revision will affect just about every part of your water system.

Treatment: The new rule requires additional corrosion control
Distribution: The new rule requires asset inventory updates
Control: The new rule requires new EPA forms, data inventory asset upgrades project timing.

This update will follow the same procedures that I did in the first article. I went to the source for clarity. Chelsea Ransom, LCR Manager at Region 8 EPA, provided the following information regarding the questions I asked.

"Thank you for your question regarding the LCRR. Please note that the final rule revision was published in the Federal Register on January 15, 2021. The compliance date for the revised rule is currently is January 16, 2024. During this three-year period, water systems must remain in compliance with the requirements of the existing rule (i.e., the LCR that is codified in the July 1, 2020 Code of Federal Regulations).

We are working to develop implementation guidance and other technical documents that will support rule implementation and promote national consistency. We are also working to develop implementation training and background on the requirements of the revised LCR and will post announcements" on EPA's drinking water training page (www.epa.gov/dwreginfo/drinking-water-training).

EPA will follow the science and law in accordance with the Biden Administration's executive orders and the Safe Drinking Water Act in reviewing the Revised Lead and Copper Rule to ensure that it protects public health and the environment. EPA will provide additional information as it become available."

I want to share some more info that I have found on the subject. I pulled this off the website for your enjoyment:

Better Science, Better Testing
The old rule enabled sampling techniques that could underestimate lead in drinking water. Based on better science, the new LCR requires water systems to follow new, improved tap sampling procedures that will better locate elevated levels of lead in drinking water.

One key improvement in testing protocols is the new "fifth liter" sampling requirement, which captures lead that can enter drinking water from a lead service line (LSL) – a lead pipe that connects tap-water service between a water main and house or building.

Under the new rule, a sampler must draw four liters between a water main and house or building. Under the new rule, a sampler must draw four liters of water before collecting a test sample so the water is more likely to come from the lead service line and not the internal plumbing of a building.

To get the most accurate test results, the rule also requires wide-mouth bottles for collecting samples and prohibits sampling instructions that recommend flushing and cleaning or removing the screen (called an aerator) that covers the faucet before collecting samples.

Additionally, to target homes with the highest potential for elevated lead levels, systems must collect samples from homes with lead service lines. If there are no LSLs, systems must collect samples from other leaded plumbing. When an individual sample at a home exceeds 15 ppb, systems must conduct follow-up sampling as part of a find-and-fix process to identify sources of lead and actions to reduce lead in the drinking water.

Closing Loopholes and Replacing More Lead Service Lines in Their Entirety

The new LCR will drive more instances where lead service lines are replaced in their entirety. The old rule created so many loopholes that since 1991 – over nearly 30 years – only 1 percent of utilities actually replaced lead pipes as a result of an action level exceedance.

Under the new rule, water systems will be required to fully replace at least 3 percent of lead service lines each year when 10 percent of sampling results are above 15 ppb. The new rule's real 3 percent replacement rate will do more to remove lead service lines than the old fule's unmet 7 percent rate by propelling early action, closing loopholes, and strenghthening replacement requirements.

Under the new rule, systems:

- Must have a plan in place and must start replacing lines as soon as sample results are above the trigger or action level.
- Cannot avoid replacing lead service lines through test ing.
- Are required to replace the water system-owned portion of a lead service line when a customer chooses to replace their customer-owned portion of the line.

Additionally, partial lead service line replacements, which can lead to short term spikes in lead concentrations, will not meet the new requirements. Under the old rule, partial service line replacements were allowed and were common.

Empowering Communities

In order for individuals, communities, water systems, and local governments to effectively take action to reduce lead in drinking water, they need to know where lead service lines are and what resources are available to help address lead in drinking water. The new Lead and Copper Rule builds the information infrastructure needed to empower these decisions.

Public Inventory of Lead Service Lines

Under the new rule, water systems are required to indentify and make public the locations of lead service lines, following the example of many cities across the country who have proactively taken this step. By providing thorough and transparent information on where lead service lines exist, communities can make informed decisions to reduce lead exposure. Additionally, residents with a known or potential lead service line will be notified and receive information about steps they can take to reduce their exposure to lead in drinking water.

Timely Testing Notifications and Lead Reduction Options for Homeowners

If a sample taken from a home has a result over 15 ppb of lead, the water system must notify occupants of the home within three days, so that steps to reduce lead exposure can be taken immediately. Notification of tap sample results under 15 ppb will occur within 30 days. If there is a system-wide action level exceedance, water systems will notify all customers within 24 hours and provide educational materials within 60 days. Water systems will also notify homeowners and building owners about opportunities to replace lead service lines, including information about financial assistance programs, if available, to help pay for replacing the customer-owned side of the line.

Information on Funding Resources to Support Lead Service Line Replacement

To help communities as they make decisions about funding, EPA has compiled information about federal funding, case studies, and other additional resources to assist states, local and tribal governments, and water utilities. These options include EPA's Drinking Water State Revolving Loan Fund, the Water Infrastructure Improvements for the Nation Act (WIIN) Grant, Water Infrastructure Finance and Innovation Act (WIFIA) financing program, as well as the Housing and Urban Development's (HUD) Community Development Block Grants. For a list of funding opportunities and for additional information on how to apply for and meet the funding requirements, please visit: www.epa.gov/safewater/pipereplacement.

For more information on the new Lead and Copper Rule visit: https://www.epa.gov/ground-water-and-drinking-water/final-revisions-lead-and-copper-rule.com.

CONCLUSION

Things to remember:

- Compliance date for the new LCRR is currently JANUARY 16, 2024.
- You have 3 years to put together a plan to comply.
- There is funding available for LEAD SERVICE LINE REPLACEMENT.
- Maintain the current LCR procedures until the Compliance Date.

As always, Wyoming Rural Water Association is here to help you navigate this new rule, as well as all things water, wastewater, or solid waste.

The New Lead and Copper Rule

On December 22, 2020, U.S. Environmental Protection Agency (EPA) finalized the first major update to the Lead and Copper Rule (LCR) in nearly 30 years. EPA's new rule strengthens every aspect of the LCR to better protect children and communities from the risks of lead exposure. The new LCR will **better protect children** at elementary schools and child care facilities**, get the lead out** of our nation's drinking water, and **empower communities** through information.

In older homes and buildings, lead can leach from service lines, solder, and fixtures into tap water and become a significant source of lead exposure. In children, lead exposure can cause irreversible and life-long health effects, including decreasing IQ, focus, and academic achievement. EPA's new Lead and Copper Rule strengthens regulatory requirements to better protect children and communities from lead in drinking water.

Better Protecting Children at Elementary Schools and Child Care Facilities

Children spend a large amount of time in elementary schools and child care facilities and lead in the internal plumbing of these facilities can pose a risk to children's health. For the first time, the new Lead and Copper Rule requires that community water systems test for lead in drinking water in elementary schools and child care facilities that they serve. The old rule had no federal requirement for community water systems to test for lead in drinking water in these buildings. This common sense and critical improvement ensures that children—who are at increased risk from lead exposure—are protected where they spend a significant amount of time learning and playing. The water system is also required to provide timely results along with information about the actions the elementary school or child care facility can take to reduce lead in drinking water.

Getting the Lead Out

EPA's new rule uses science-based testing protocols to find more sources of lead in drinking water. The new rule also triggers actions to address lead earlier in more communities and reduces lead by more effectively managing corrosion control treatment, closing loopholes, and replacing more lead service lines in their entirety.

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Operators Corner

Wastewater Questions by Mark Court:

1. If a wastewater environment has no dissolved oxygen but has nitrate, it is described as which of the following?

- **a.** Aerobic
- **b.** Anaerobic
- **c.** Anoxic
- **d.** Hypoxic

2. Biomass in a conventional activated sludge plant contains approximately what percentage of phosphorus?

- **a.** 1%
- **b.** 2%
- **c.** 3%
- **d.** 4%

3. The denitrification process "gives back" _____ mg/L alkalinity and _____mg/L oxygen equivalence.

- **a.** 7.14 and 4.6 respectively
- **b.** 3.57 and 3,86 respectively
- **c.** 4.6 and 7.14 respectively
- **d.** 2.86 and 3.6 respectively

4. The chlorine demand suddenly increases significantly. This change is most likely caused by what?

- a. Nitrification beginning to occur at the plant
- b. An industrial discharge upsetting the plants pH balance
- c. A sudden drop in ambient temperature
- d. Excessive mixing in the chlorine contact chamber

5. How much alkalinity (as calcium carbonate, $CaCO_3$) is returned by denitrification of 20mg/L of nitrogen (NO_3-N)?

- **a.** None
- **b.** 71.4 mg/L
- **c.** 152 mg/L
- **d.** 7.2 mg/g

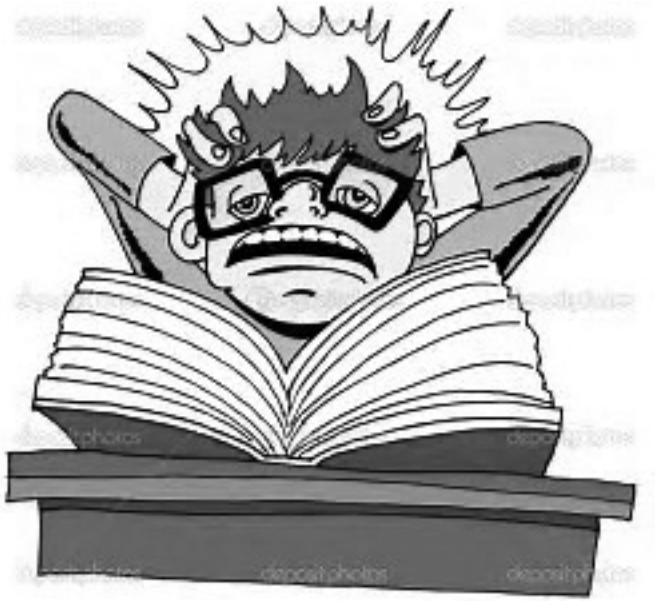
Water Questions:

1. UV is used as a disinfectant because it is effective in the inactivation of _____ and because it _____.

- **a.** Giardia, is inexpensive to use
- **b.** Cryptosporidium, does not produce DBPs
- **c.** Viruses, is cheap to install
- **d.** Giardia, has a very small "footprint" at a water plant

2. If a routine or repeat sample tests positive for total coliform, what must it also be analyzed for?

- **a.** Repeat coliform test and fecal coliform
- **b.** Fecal coliforms
- **c.** Fecal coliforms and E.coli
- **d.** E.coli



3. What methods are used to place grout into the annular space between the well face and the casing?

- **a.** Tremie pour and pumping
- **b.** Tremie pour and dump bailer
- **c.** Dump bailer, pumping and water pressure driving
- **d.** All of the above

4. In a pipe repair using the slug method of disinfection, the chlorine concentration of 300 mg/L can have a contact time of

- **a.** 15 min
- **b.** 30 min
- **c.** 1 hr
- **d.** 2 hrs

5. How many gallons of 12.5% sodium hypochlorite solution are required each day to disinfect a water supply flowing at a rate of 1.5 MGD, if the desired chlorine dose is 2.5 mg/L? The specific weight of 12.5% sodium hypochlorite solution is 10.2 lbs/gallon

- **a.** 250 gallons
- **b.** 24.5 gallons
- **c.** 31.3 gallons
- **d.** Shut up, Michelle, I'm Googling it!

Answers

Wastewater

1. C 2. B 3. B 4. A 5. B

(20 mg/L NO_3-N) x (3.57 mg $CaCO_3$/mg NO_3-N removed)

Water

1. B 2. C 3. D 4. A 5. B

1. Calculate lbs/day of chlorine using Dose x flow x 8.34: 1.5x2.5x8.34= 31.275 lbs chlorine
2. Divide by purity (.125) to get lbs of sodium hypochlorite: 31.275/.125 = 250.2 lbs sodium hypochlorite

Spring (Spall) Fall Training Conference

We are going for it! Spring in person conference may not have happened, but Spall (it's not spring, it's not fall) will be the training happening of 2021. Held at the Ramkota in Casper, as many classes as possible are being planned on being out-side and hands-on. We have all been cooped up and sitting way too much this last year. Let's get out and play with some tools of the trade and maybe even get to operate some heavy equipment. Sound fun? Not only will it be a great time, but we will get a chance to actually see and mingle with other operators from around the state. Let the story telling begin.

As Mr. P. said last year, "Let's hope that vaccine distribution and continued vigilance will combine to have things getting back to normal over the summer. To paraphrase Igor in Young Frankenstein, "I am about done with ABBY normal." Amen, and even more true this year than last.

This isn't going to be your regular sort of conference and you are going to really regret it if you miss it. Tours, hands on and a few surprises will be on the agenda. Zoom is fine, but we are all looking forward to seeing you in person in Casper.

Kathy Weinsaft, Training Specialist

Board of Director Openings

Every year, the Wyoming Association of Rural Water Systems has board of director elections depending on the Region of the state of Wyoming for Board seats that are at the end of their term. These are 3 year terms and there are currently no term limits. Board members must be employees, elected officials or designated representatives of a voting member system (PWS's that are eligible for USDA RD funding typically serving populations under 10,000). The organization's By Laws define voting member as Non-profit public water, wastewater, associations, districts, municipalities and (or) other types of public utilities of any size with 10,000 or less population, engaged in the transportation, distribution and/or sale of public utility services in the rural areas of the State of Wyoming.

Board members provide oversight of and direction to the Executive Director on policy issues/items including budgetary, program, legislative and professional direction. Board members receive no direct compensation for serving. Board members are reimbursed for travel expenses to attend official association meetings, can attend in person conferences and training sessions at no cost including hotel and per diem. Board members can attend virtual training sessions at no cost.

For 2021, two region board seats are up for election. The Southwest region (Teton, Lincoln, Uinta, Sweetwater and Sublette counties) and Northeast Region (Sheridan, Johnson, Campbell, Crook and Weston counties). Currently the Southwest Region is represented by Mr. Ron Overson who currently serves as Board Secretary. Ron is the Utility Manager for Grand Targhee Resort in Teton County. The Northeast Region is represented by Mr. Dan Coughlin who currently serves as Board Vice President. Dan is the Project Manager of the Sheridan Area Water Supply JPB in Sheridan County.

Mr. Overson has expressed his intention to NOT run for re-election. Ron has served since 2009 and believes it is time for new perspectives on the Board, as well as needing to concentrate on work commitments. Mr. Coughlin has expressed his intention to run for re-election. Mr. Coughlin has served since 2018.

Those interested can contact Mark Pepper, Executive Director for more information. A letter of interest must be received by March 31 to be included in Business Meeting materials distributed to voting member delegates. The Annual Business Meeting does entertain floor nominations for Board seats as well. The Annual Business Meeting will be held virtually prior to May 31st, 2021. Announcements for the Annual Business Meeting will be made during the first two weeks of April per the By Laws.

Mark Pepper, Executive Director

Wyoming Association of Rural Water Systems

30th Annual Spall Conference – BOOTH REGISTRATION

August 24th - 27th, 2021 Ramkota Hotel and Conference Center, Casper, WY

Please print legibly or type:

Company Name: _____

Mailing Address: _____

City/State/Zip: _____

Telephone: _____ Fax: _____

Type of Product/Service: _____

Name(s) and emails of those attending: _____

_____

_____

Exhibit Hall – 8' x 8' space, 6' skirted table, pipe and drape, 2 chairs, wireless internet, meals for two. If you have more than 2 representatives, a fee of $40 per representative will be charged.

1st, 2nd, 3rd request for booth # _____, _____, _____

Note: Some booths are numbered the same as the sleeping room right behind it. If you choose one of those booths, you must also take that sleeping room. Reserve the room by emailing Megan Miller mmiller@ramkotacasper.com.

ASSOCIATE MEMBER – EARLY BIRD REGISTRATION by 7/15/21:
Member Exhibit Hall ___ x $475 _____

ASSOCIATE MEMBER – REGISTRATION after 7/15/21
Member Exhibit Hall ___ x $600 _____

NON-MEMBERS – EARLY BIRD by 7/15/21 (Includes non-advertising membership through 12/31/21 @ $350)
Non-Member Exhibit Hall ___ x $825 _____

NON-MEMBER – REGISTRATION after 7/15/21 (Includes non-advertising membership through 12/31/21 @ $350)
Non-Member Exhibit Hall ___ x $950 _____

NON-MEMBER (Does not include membership)
Non-Member Exhibit Hall ___ x $1,000 _____

SPONSORSHIPS Available – You do not have to be an Exhibitor to be a sponsor

(Company names will be listed in conference program and on signage)

Break/Food Sponsor ___ x $250 = _____

Game Night (Food and prizes): ___ x $100 = _____

Meals for representatives ___ x $ 40 = _____

Sponsorships packages available: email Mark Pepper – markp@warws.com

- Donations for door prizes will be accepted and appreciated

Total $ _____

- Refund Policy: No refunds after 7/15/21

If paying with a credit card, please complete the following:

Name (exactly as it appears on the card): _____

Billing Address: _____

Card Number: _____ Expiration date on card: _____

Host Hotel:
Ramkota Hotel and Conference Center – $80 room rate
800 N. Poplar, Casper, WY 82601
www.ramkotacasper.com or call 1-307-266-6000

Return this form with payment to:
WARWS, PO Box 1750, Glenrock, WY 82637 or
Fax: (307) 436-8441 or Register on-line: www.warws.com
For more information call our office at (307) 436-8636

CONFERENCE REGISTRATION

30th Annual Technical Conference

August 24th-27th, 2021

Ramkota Hotel and Conference Center, Casper WY

Name for Badge: _____

Your Employer: _____ 5 Digit Operator ID# REQUIRED _____

Your Title or Position: _____ Daytime Phone: _____

Billing Address: _____

City/State/Zip: _____

Bill my employer: _____ Pay with credit card: _____ E-mail confirmation to: _____

Personal address to receive our magazine: _____

Email to receive training and other notifications: _____

I plan to attend only the Pre-Conference on the 24th (No Fee) _____

FULL REGISTRATION August 24th - 27th

(Includes Pre-Conference, all classes, Exhibit Hall, meals and breaks, and **Certification processing**)

Member – Early Bird, payment included (By 7/15/21) ..... $395 _____

Member – After 7/15/21 ..... $445 _____

Non-Member Early Bird, including a new Individual Membership through 12/31/21..... $505 _____

Non-Member after 7/15/21, including a new Individual Membership through 12/31/21..... $555 _____

Decision Maker / Clerk ..... $150 _____

I plan to bring a water sample for the 'Best Tasting Water in Wyoming' contest (circle one) – YES NO

One-day only registrations	**Member**	**Non-member**
Wednesday only: (classes, lunch, Exhibit Hall, Game Night)	$225	$250 = $ _____
Thursday only: (classes, lunch, Exhibit Hall).	$225	$250 = $ _____
Friday only: (buffet breakfast, classes)	$155	$185 = $ _____

Additional meal tickets, for guests, will be available at the Registration Booth

Refund policy: No refunds after 7/15/21. Amount can be credited to a future event

Total $ _____

If paying with a credit card, please complete the following:

Master Card or Visa Number: _____ Expiration date on card:_____

Name (exactly as it appears on the card): _____

BillingAddress:_____

Host Hotel:

Ramkota Hotel & Conference Center – $80 room rate

800 N. Poplar, Casper, WY 82601

Reservations: www.ramkotacasper.com (307) 266-6000

Return this form with payment to:

WARWS, PO Box 1750, Glenrock, WY 82637 (307) 436-8636

or Fax (307) 436-8441 or Register on-line: www.warws.com

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Journal Article Title: **Tools for AWIA Compliance**

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Water utilities today face unprecedented threats to the security and resilience of their systems. In every state, 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 water systems, 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. The America's Water Infrastructure Act (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 as of October 23, 2018, the date when the AWIA was enacted. Compliance deadlines depend on the system size:

- If serving over 100,000 people, the RRA was due on March 31, 2020 and the ERP was due on September 30, 2020
- If serving 50,000 to 99,999 people, the RRA was due on December 31, 2020 and the ERP is due on June 30, 2021
- If serving 3,301 to 49,999 people, the RRA is due on June 30, 2021 and the ERP is due on 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.

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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 water utilities might face and includes information on staffing, emergency response plans, funding, water supply and demand management, communications, and partnerships.

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 or join the What's Going On newsletter email list by contacting WSD-outreach@epa.gov. Use these free water resilience resources as you continue working toward providing safe and reliable services to customers during emergencies.

WYOWARN

Wyoming Water and Wastewater Agency Response Network

WYOWARN is a group of Wyoming water and wastewater utilities that cooperatively prepare for the next natural or man-made disaster by bridging political and jurisdictional boundaries through training, protocols and agreements so that utilities can respond to disasters by sharing personnel, tools and equipment.

Why do we need WYOWARN?

Water and wastewater systems provide for public health, sanitation and safety. When water and wastewater systems fail, the well-being of communities quickly deteriorates. Without clean water and ways to remove and treat wastewater, communities become susceptible to disease and illness. The lack of water constrains emergency services such as medical response and fire fighting. In these conditions, people become frustrated and fearful.

Restoring service restores hope and the ability of a community to respond to natural of man-made disasters. Neighboring utilities already have the trained staff familiar with Wyomiing Water Quality Rules and Regulations. They are familiar with western water systems and are already prepared for and accustomed to Wyoming weather. They already have the specialized equipment needed for testing, pumping, or repairs and may have backup supplies of pipe, valves, chemicals, generators, etc., readily available.

While it is already the Wyoming way to lend a hand to our neighbors when they need it, having procedures and responsibilities spelled out ahead of time prepares us for the day when we need it. That is what WYOWARN is about – preparing utilities to help each other in the event of an emergency.

Not a member yet? Join WYOWARN!

1. Visit the WYOWARN website at www.WYOWARN.org and click on "Become a WYOWARN member Today!".
2. Download the Wyoming Mutual Aid and Assistance agreement.
3. Obtain necessary permissions to sign the Mutual Aid Agreement
4. Sign and return the agreement to:

Wyoming Association of Rural Water Systems
PO Box 1750
Glenrock, WY 82637
or e-mail a scanned copy to:
markp@warws.com

A Note From
Michelle Christopher
Source Water Specialist
mchristopher@warws.com
307-259-8239

Source Water Protection Areas

Source water protection areas are the heart of a source water plan. These are created by delineating an area around a well or surface water intake that contributes water to the drinking water supply either through runoff or recharge to an aquifer. While the recharge area can be quite large, source water delineations refine the areas to those that pose the greatest risk to the drinking water source. Just as every water source is unique, every source water protection area is unique, based on local hydrogeological and environmental factors.

Surface water delineations are fairly simple. Water flows downhill. Little streams flow into bigger streams. The recharge area for a surface water treatment plant would include all land within the drainage upstream of the intake.

In a small mountain town, this is fairly small and simple. A community further downstream may find it more daunting. To simplify a large area, it is best to focus on portions of the watershed that have the highest potential to impact water quality. One technique is to create an arbitrary area around the intake or include set distances upstream and downstream from the intake. These areas have the highest likelihood of affecting water quality at the intake.

Another method of refining a surface water area is to include buffer zones along a water source. Areas immediately adjacent to a body of water contribute the most runoff and can provide good filters to uptake contaminants before they get to the water body.

A final technique used to refine surface source water protection areas is time of travel. The further away something is from an intake, the less likely it is to affect the water quality at the intake. Factors affecting time of travel for surface water include stream miles, stream flows and slope. Particles travel faster with higher slopes and flows, making steep canyons higher contributors to water quality than broad valleys. Time of travel would also include all the area of the watershed along those stream miles.

In Wyoming, surface water protection areas are typically divided into three delineations. The first delineation is a 100-foot radius around the surface water intake. This is referred to as the Accident Prevention Zone (Zone 1). Contaminants released in this zone have the highest probability of affecting water quality.

The second delineation is created using a combination of buffers and time of travel. This is called the Attenuation Zone (Zone 2), a 1000-foot buffer on either side of perennial water bodies extending upstream of the intake 15 miles. Contaminants released in this zone still have a high probability of entering the intake, thus affecting water quality. The final delineation is simply called Zone 3. This zone includes all of the area within the watershed up to the hydrogeologic divide. While contaminants released in this zone would still have the ability to impact water quality, the chances are much lower.

Determining groundwater protection areas is much more difficult. Because we can't see what's going on under the ground, we need to look for other clues to determine how water is moving underground. Groundwater is influenced by topography, like surface water, but it is also affected by geology. Porous layers of sand and cobble allow water to percolate down to lower aquifers. Layers of tightly compressed sandstone, siltstone and clay provide confining layers that restrict surface water movement to deeper aquifers. Aquitards (non-porous, non-water bearing rocks) create groundwater divides, but may be invisible from the surface. Outcrops of geological layers may provide aquifer recharge. Special geological features such as Karst topography may impact how groundwater moves as well. Karst topography is a geological feature that is formed when portions of soluble rocks like limestone or gypsum dissolve. It is characterized by subterranean tunnels and caves. The Madison formation in Wyoming is an example of Karst topography.

Hydrologic features may also impact the size and shape of groundwater protection areas. A stream that flows across a shallow aquifer may gain flow from the groundwater below it. This is called a gaining stream. A stream that loses flow through the stream bed, is of course, a losing stream. Either way, these surface water features can affect groundwater quality and quantity. Just like surface water, ground water flows downhill. The static ground water level or potentiometric surface can indicate which direction the groundwater "flows". Contaminants "upstream" of a well could impact the water quality of the well.

There are several methods of delineating groundwater protection areas. The first is an arbitrary radius. This is simply a circle with a fixed radius around a well. The radius may be determined by local factors such as soil porosity or hydrogeology. It also may be determined by land uses around the well, construction of the well or other factors that affect the risk of the well being contaminated.

Calculated fixed radius is another method of delineation. This method is slightly more complex than arbitrary fixed radius. In this method, a radius is calculated based on soil porosity, pumping rate of the well, length of well screen and the time of travel. The time of travel refers to how far will a contaminant travel within a defined time (and reach the well). This method sets up concentric circles that allow a utility or operator the ability to review what potential contaminants may be in a specific time of travel zone.

More complex methods of delineating groundwater protection zones are also available. The Analytical Method uses formulas and equations are used to determine groundwater and contaminant flows. Computer software such as the EPA Wellhead Protection Model are often used. Hydrogeological mapping is used for areas with unique geological features such as Karst topography. This method requires a high level of expertise as well as access to geological and technical reports. Finally, Numerical Flow or Flow and Transport Computer models may be used. These computer models include the EPA Wellhead Analytic Element Model and the USGS MODFLOW model.

In Wyoming, there are typically three groundwater protection areas delineated. First is the Accident Prevention Zone (Zone 1). This zone is an arbitrary radius of either 50 or 100 feet around the well. The radius is determined by how the well was constructed, whether it is screened across more than one aquifer, and how susceptible the well is to contamination.

Older wells that were built before modern construction standards, or wells in unconfined aquifers generally are given a 100-foot radius while wells constructed according to current standards in confined aquifers are given a 50-foot radius. Spills or other contaminant releases in this area have the highest probability of affecting water quality. The Attenuation Zone (Zone 2) is based on a 2-year Time of Travel. Just like with surface water, contaminants released in this zone has a high probability of affecting water quality. Zone 3, the final zone, is based on a 5-year Time of Travel. Contaminant sources in this zone are still capable of affecting water quality but are the least likely to do so.

When you review the source water protection areas that were delineated for your system, think about what's on the ground out there – are there any sources of contamination to be worried about? How could a new development in this area affect your source water quality? How could a natural disaster such as fire or drought affect water quality? Developing strategies to contain or mitigate these contaminants is a great start to protecting your source water quality.

How to Solicit Rate Analysis

Carl Brown, President
GettingGreatRates.com

COVID-19 stopped utilities from doing many things: Shutoffs due to non-payment and rate increases, to name two. Your reserves took a hit. It is time to turn that around. It is time to increase rates.

Wait a minute. You would probably solve the inadequate revenue problem by doing a flat percentage rate increase. That is simple to do. I often recommend it, but only when the current rate structure is fair. Your current rate structure probably is not fair. An across-the-board increase to those rates would make things worse. You need to start with a fair rate structure. For that, you need rate analysis. Here is a good way to get that done without excess work, worry and risk.

But wait another minute. If your utility is small, about 500 connections or less, you probably need free rate setting help and do-it-yourself best practices. Those, and more, are covered in the "Rate Setting Best Practices Guide" available at https://gettinggreatrates.com/Freebies.

How NOT to Solicit Rate Analysis

The usual process of writing up and mailing a Request for Qualifications (RFQ) works fine for engineering, but not for rate analysis. The reasons are too many to include here. But they are detailed in the "Rate Setting Best Practices Guide."

How to Solicit Rate Analysis

1. Your board or council should direct the city administrator, district manager or whoever the prime executive is to seek out and perhaps hire a rate analyst. That might be done with a resolution statement like the one in the guide mentioned above. (Sorry, the resolution statement is too long to include here.)

2. The executive should start by calling the state's rural water association, municipal league, or other appropriate "referrers" to find rate analysts. The executive should talk to prospects on the phone.

What will your "come-back" from COVID look like? Your utility's rate setting body will have a lot to do with that.

3. Promptly receive proposals from rate analysts by e-mail.

4. Consider the contents of the rate analysts' proposals – what they say is needed, what they will do, what they will charge, their no-recourse guarantee, etc. Importantly, you will learn about each analyst from calls to them and to their references and others. Read several reports that each analyst provided to previous clients to learn what your utility can expect to receive. Finally, consider the fees each analyst proposed.

5. The executive should hire the analyst who will give the utility the mix of services and fees that will best serve the utility and ratepayers.

6. If the fees of the chosen analyst will go over the spending limit set by the governing body, the executive should present to the governing body the results of their investigation and provide justification for hiring the preferred analyst. Then it is up to the board or council to make the analyst selection.

7. Once hiring has been authorized, notify the selected analyst that they were chosen, tell them what services are desired and start the project.

This seven-step solicitation process is for rate analysis. With changes to Steps 2 and 4, the process works for other "personal services," too.

The Wyoming Association of Rural Water Systems partnered with my firm to give utilities rate setting help. WARWS does the simple water and sewer utilities' rate calculations. I do more complicated water and sewer rate analyses, plus all other utility types. The Wyoming RATES Program https://gettinggreatrates.com/WYRATES could get you to great rates even easier than the seven-step process in this article. Check it out.

Closing Thoughts:
Keep things in perspective. If solicited properly, rate analysis should be cheap – about $6,000 for most utilities. You could invest lots of staff, board or council hours trying to perfect the solicitation process. But the more time you work on it, the more complicated you will make the process. That is counterproductive. The most effective solicitation process leaves it up to prospects to determine what is needed and to "make their case" as they see fit. Plus, the more time you spend soliciting and selecting, the more revenue you fail to collect during that delay. Remember, you need more revenue. Time is money.

If you have already decided who you want to do your rate analysis and you have justifiable reasons for that choice ("sole-sourcing"), you should document that justification and hire that analyst. Do not solicit proposals from others just so you can hit the magic number of proposals or turndowns (usually three) from providers you would not hire anyway. Doing so is meaningless and it wastes the time of those other service providers. Time is their most valuable resource.

Is rate analysis and "right-sizing" your rates really this easy? No. The process described above is a summary of just a few of the 41 best practices in the "Rate Setting Best Practices Guide." There are a lot more ways you can make improvements to your rates, most of which do not involve a rate analyst at all.

Excluding me, rate setting is not fun for anyone. But do it well and you, the utility and your ratepayers will be better off for it.

Carl Brown is President of GettingGreatRates.com, which specializes in rate analysis for water, sewer and other utilities. The firm serves as the RATES Program rate analyst for the Colorado, Kansas, New Mexico, North Dakota, Virginia, and Wyoming rural water associations. Contact: (573) 619-3411; Carl1@gettinggreatrates.com

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5	3	6	1	8	7	9	2	4
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9	1	8	5	3	2	6	4	7
8	2	7	9	1	5	4	3	6
6	4	1	3	2	8	7	5	9
3	9	5	7	6	4	2	1	8

Water Plant Hack in the News!

You might have heard about the water plant in Florida in which a hacker changed chemical dosing. If you want to avoid becoming a headline, here are ideas to help.

1. Change usernames and passwords to complex, 9-digit (or more) words with at least one symbol. This is the single most important and easiest security procedure. If remembering passwords give you a headache, then come up with something memorable like 30" pipeLine or 7pointBull$ (for all you hunters out there).

2. Make sure former employees are completely locked out of remote access and physical access by changing log-in platforms and physical locks.

3. Make a list of any vendor or integrator that may have access to your system such as filter vendors, UV vendors, and Srewpress vendors. Standardize on remote support security procedures and enforce them with both technology (firewalls) and written expectations to vendors.

4. Remove SCADA computer adjustments to chemical dosing; instead, rely on local/manual adjustments.

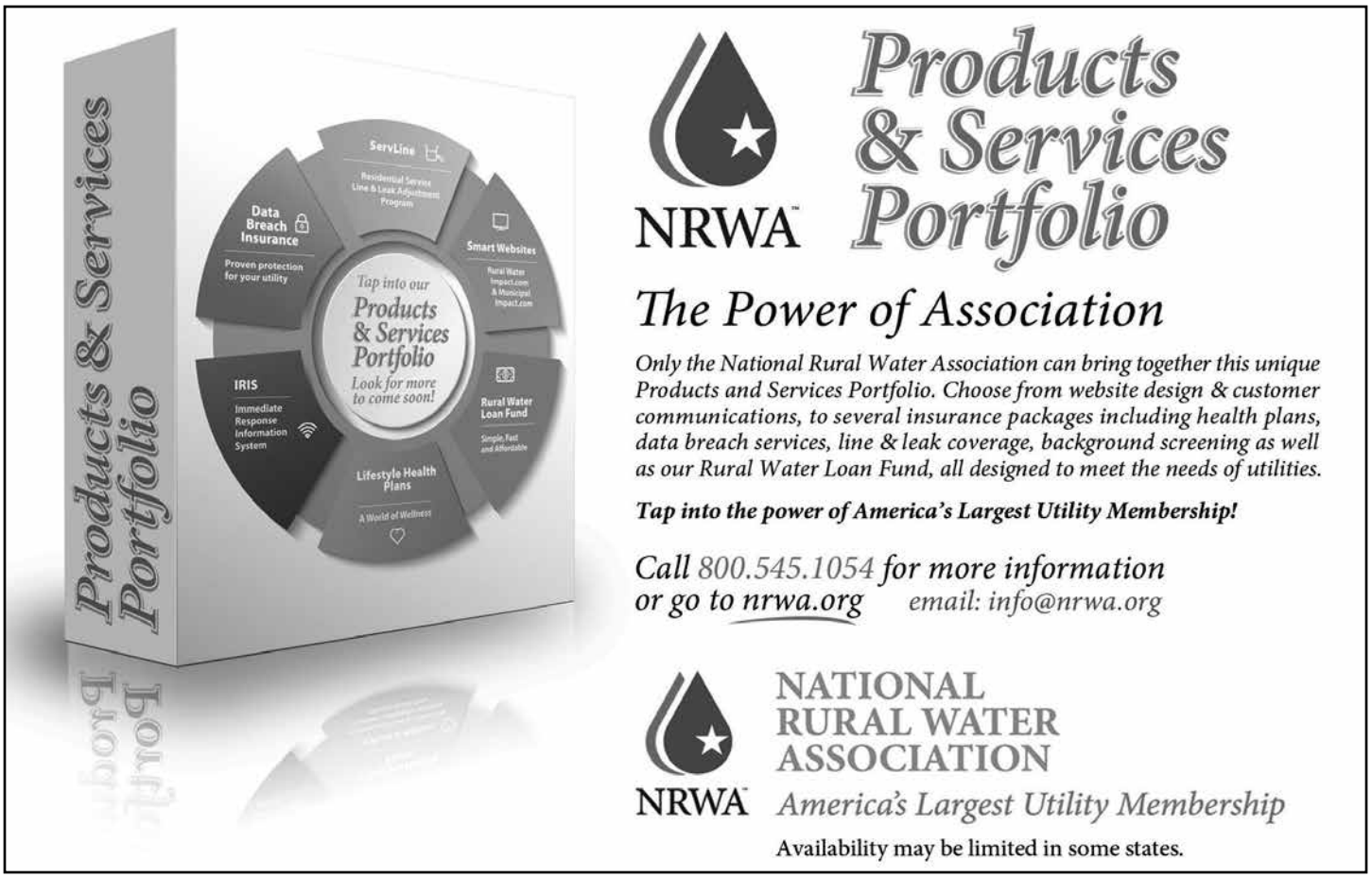
5. Lock out high service pumps from distributing water if water analyzers detect a problem with finished water. (Please ask Timber Line for our control solution)

6. Do a cyber-security assessment. Your integrator can help with answers to the audit questions, and with solutions such as managed firewalls.

7. DOCUMENT your changes! Record passwords and store off site (not under the keyboard). Make informational nameplates for control panels that have been modified. Add documentation to Operator Procedures.

8. Add a once-weekly alarm software call-out test to your standard operations procedure…because no one wants to clean up a mess!

Article provided by Kim Evezich, Timber Line Electric and Control 303-697-0440 kim@tlecc.net



FORD FLEET PROGRAM

The National Rural Water Association and the Ford Motor Company have created a partnership to offer special fleet discounts to State Rural Water Associations and their utility system members. This partnership combines the buying power of 31,000 individual utilities to provide reduced fleet pricing on utility vehicles. The Ford Fleet Team is #1 in commercial fleet customer satisfaction according to surveys. The Rural Water Ford Fleet Program is a valuable member benefit for water and wastewater utilities. State Rural Water Associations determine eligibility for their members, and provide a fleet code that allows access to substantial vehicle discounts to fill the need for reliable work vehicles. Fleet vehicles must be registered in the name of a member water or wastewater system.

Member utilities should contact their State Rural Water Association to access the Rural Water Ford Fleet Program. Vehicles may be purchased at your local dealer or through the national fleet auto group, get all the details you need online at: www.nrwafleet.com. Incentive discount pricing is available on fuel efficient cars, vans, SUVs and trucks. Systems can save up to $5800 off factory invoice per vehicle. Happy shopping!

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- Vehicles must be registered and operated in the 50 United States
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Eligible Vehicles	Incentive
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Escape (Excludes Hybrid/PHEV)	$1,800
Expedition	$4,000
Explorer	$1,000
Explorer XLT 4WD or RWD	$1,500
F-Series Super Duty F250-F550	$5,800
F150 4X2 Reg Cab	$4,100
F150 (Excludes Raptor)	$5,100
Transit Connect	$2,400
Transit 2WD	$4,200
Transit AWD	$3,500
Ranger 4X2 Crew Cab	$1,000
Ranger 4X2 SuperCab	$300
Ranger 4X4 Crew Cab	$1,700
Ranger 4X4 SuperCab	$1,400

Self Portrait

Scrawny Girl's Gumbo

By Michelle Christopher

It's 2021. I've always tried to maximize my food resources and not be wasteful. This past year… I've brought it to a whole new level. Living in the boonies, trips to the grocery store usually occur on a two-week basis – then around rolled the pandemic, and those trips got stretched out to every 3-4 weeks. In the interim, I relied heavily on cleaning out my freezers (Hello, vintage antelope sausage!) and pretending I was on the cooking show Chopped to create meals. For those who aren't fans, Chopped is a television show where contestants are given a basket of mystery ingredients, and they have to create a meal with them. Honestly, if this doesn't mirror real life, what does?

Soups and stews are a great way to incorporate random ingredients into a cohesive meal. Leftovers, vegetables, and anything else languishing in the refrigerator is fair game for the soup pot. Trust me – my gran and aunties have been doing this for years! Gumbo is a savory soup from Louisiana, containing tomatoes, some sort of protein and… OKRA. Okra was brought to America from West Africa by the slave trade and has been a soup staple for probably longer than that. Gumbo can be thick, thin, contain chicken, crayfish, sausage, rice, and other staples.

Central to the creation of gumbo is the thickener. Okra is an awesomely gooey, sticky vegetable, so it can thicken the soup on its own. However, gumbo is often thickened with file (powdered sassafras root) or roux. Roux is my preference. Roux is nothing more than grease and flour, browned to your desired shade. If you barely let it cook, it's the base for most white sauces and gravies. If you allow the butter and flour to brown… you get roux. A proper roux gives gumbo heft, richness, and flavor, all using two simple ingredients.

Gumbo can easily be dehydrated and enjoyed on trail as well. If you plan on doing this, make sure you cut everything into small pieces, so they rehydrate easily. Incidentally, gumbo pairs incredibly well with fry bread. I would recommend planning on hiking after eating to reduce encounters with wildlife, because this meal tends to bring in all creatures, great and small for miles around.

Sausage and Shrimp Gumbo Recipe

1 lb link sausage – I've used andouille, spicy Italian, and garlic antelope bratwurst.
1 lb raw shrimp, peeled and deveined – I've used shrimp or crawdads. Chicken could also be an option.
Vegetable oil
¾ c flour
1 medium onion, diced
1 small green pepper, chopped
2 ribs celery, sliced

* Onion, green pepper, and celery is referred to as the Trinity of Cajun cooking. Since John goes into anaphylaxis

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when he gets near onions and green peppers, I leave these out. Since this is your dinner, only add the things you like! (I promise not to tell)

3 cloves garlic, minced
2 c chopped okra – frozen okra is available in most grocery stores, and there usually isn't a run on it, like other pantry staples. Weird.

1 quart chicken stock
1 quart water
2 bay leaves
1/2 tsp thyme
2 tsp Creole seasoning
1 can diced tomatoes *Again, I omit these to prevent severe allergic reactions in my house. It's your call!
2 c cooked rice

Directions

- Cut sausage links into chunks and brown in a Dutch oven or large pot. Set browned links aside, saving the drippings. If you're using raw chicken, chop it, brown it in the drippings and set aside. Or, if you're feeling particularly skilled, brown the chicken pieces whole, set aside, and shred before adding it to the gumbo later.

- Add enough oil to pan to reach around ½ cup. Add flour, and begin cooking over medium heat, until it reached a deep brown. This requires constant attention! Allow your mind to wander and you'll be pulling the batteries out of your smoke alarms.

- Stir in onion, green pepper and celery, and cook until almost translucent. Add garlic, and cook a bit more, stirring often, being careful not to burn the garlic.

- Add all the remaining ingredients except the rice. Add the sausage links (and chicken, if using), reduce heat and simmer. Ideally, it should simmer for at least an hour to let the flavors to combine, but if you're fending off a ravenous crowd, at least allow it to simmer for 30 minutes!

Serve over rice. John prefers his gumbo hotter than I do, so he adds hot sauce. It's also nice to pull the bay leaves out, so people don't try to politely eat them later. Again, it's your call. Not only does this meal dehydrate well, it also freezes fabulously, in case you're not thrilled about eating gumbo for the next week straight.

Our Western Heritage

by Kathy Weinsaft

Go East Young Man

As I was on the treadmill not long ago, it occurred to me that most non-Wyomingites define our gorgeous state with what the western side has to offer. While that is a lot, it is by no means all that we have. The eastern side of the Cowboy state is an incredible treasure that deserves more respect than it often receives. I can promise you that this spring I will be doing my eastern tour. Want to come with me?

Let's take a day and spend it at the Jim Gatchell Museum in Buffalo. It all began in 1900 when Jim Gatchell opened a pharmacy in Buffalo. It was a popular stop for settlers, ranchers, cowboys, Indians, and folks just passing through. Over the years, Gatchell received many gifts and often took different things in lieu of payment. He received buggies and wagons, rifles, firearms of the day and loads of Native American artifacts. After Jim passed away, the family donated his collection to Johnson County and the museum was built to house and display the collection. It is actually comprised of three interconnected buildings. Each of these three buildings work to tell a special part of the Gatchell story and significant tales of Wyoming. My favorite exhibition is Bomber Peak! If you don't know the story of the bomber that crashed in the Big Horns, that is more than enough reason to visit the Gatchell and find out what you don't know.

We have just enough time to stop in beautiful Story, Wyoming before dinner and the theater in Sheridan. You just can't be in this part of the world and not stop at the Story Fish Hatchery which is located in a drop dead beautiful Ponderosa Pine forest at the base of the Big Horns. They have done a lot of renovations at the hatchery and it is always fun to feed the fish. With fish fed we walk to the start of the South Piney Trail which is only about a half mile. The beginning of the trail is bordered by private land and is only a narrow swatch of an old service road. After ¾ of a mile you arrive at the old dam and the trail turns into a proper single track trail. The trail skirts the edge of the creek and limestone cliffs begin to rise. The higher you get on the path, the more the huge, slanted cliffs on the opposite side of the trail reveal themselves. After another mile, the trail cuts off against a rocky outcropping and it is time to turn around.

I am hungry after all that museuming and hiking! Sheridan, which is our next stop is a foodie's dream. They have some darn fancy restaurants there. We aren't headed to one of them though. Killy's has my vote as a favorite stop for dinner. I have been eating there since it was just a small deli case located in Warehouse Grocery. The grocery is now gone and the smokehouse restaurant is in full swing. You can pick what you want from the deli or you may sit down and order from the menu. I don't need a menu! I will be having smoked chicken with a side of Maverick beans. There is absolutely nothing on the menu or in the showcase that isn't fabulous.

With our tummy's full, we are going to enjoy some culture at the WYO theater. There is not a bad seat in the entire theater, small as it is. Though small it has some big entertainment. I have seen performances there that included everything from Garth Brooks to a Russian Folk Dance ensemble. I have never been disappointed. Be sure to look at the name plate on your seat. My beloved Shar Pei, Snuffles, who crossed the Rainbow bridge many years ago has his name engraved on one.

Ready to take a rest? We have just started on our Eastern Wyoming tour. We will continue the fun in the next Connection magazine. But until then, get out of the house

It is, after all, part of our Western Heritage

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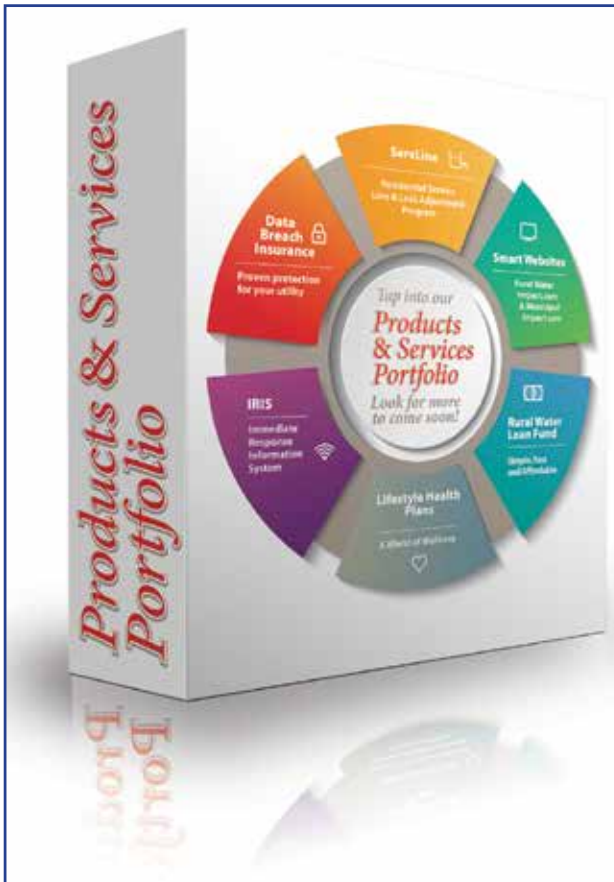

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