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Fall 2024

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Emergency Preparedness the Electrical Climate Edition

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The Wyoming Connection is the official publication of The Wyoming Association of Rural Water Systems. It is published quarterly for distribution to member systems, water and wastewater Operations Specialists, water related agencies and companies, legislators and government officials.

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Articles, letters, and photos are welcome.

Submit to:

Wyoming Association of Rural Water Systems,
PO Box 1750, Glenrock WY 82637

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(307) 436-8636 TDD 1-800-877-9965

e-mail: warws@warws.com

Web Site: <http://www.warws.com>

WARWS Staff

Office:

Mark Pepper, Executive Director

(307) 259-6903 markp@warws.com

Cori Wondercheck, Office Manager

coriw@warws.com

Donna Uribe, Administrative Coordinator

(307) 258-3414 warws@warws.com

Field:

Randy Rumpler, USDA Circuit Rider

(307) 921-2844 randy.rumpler@warws.com

Brian Linton, USDA Circuit Rider

(307) 349-4756 brian.linton@warws.com

Kathy Weinsaft, USEPA Training Specialist, UMC

(307) 262-3943 kweinsaft@warws.com

Joe Dankelman, Wastewater Specialist, UMC

(307) 439-9065 joed@warws.com

Michelle Christopher, Source Water Specialist UMC UFC

(307) 259-8239 mchristopher@warws.com

Ross Jorgensen, Technical Assistance Provider

(307) 202-3494 jorgs1973@hotmail.com

Sunny Schell, Technical Assistance Provider

(307) 670-5709 sunnyschell@gmail.com

UMC - Utility Management Certification

UFC - Utility Finance Certification

Apprenticeship Coordinator - Riata Little-Walker

(307) 620-0579 riatalw@warws.com

WARWS Board of Directors

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Erin Martin, Shoshone Utility Organization

(307) 330-6144 emartin@easternshoshone.org

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(307) 299-8692 sgreen@townofmoorcroft.com



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The Association

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.

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Falling Forward Whether We Want to or Not!!

Greetings, and happy fall. I must say, I will miss having a cup of coffee sitting on my deck looking out at our gorgeous Casper Mountain. It is equally gorgeous when it is covered in snow, but alas, generally must be viewed out of one of our large windows while sitting on a comfy couch with the heater on but.....

The summer came and went way too fast. It seems we have been busier which I'll attribute to so many things happening, lead line inventories, emerging contaminants, wildfire season, new mineral resource development and source water issues, sanitary survey season, and as always, all things cyber.

We have industry professionals on staff who can assist in each of these areas!

Lead Line Inventories – you should all know that the dead-line is/was October 16, 2024. Just filing is not the end of the road, now you must act on the inventory you submitted. Any unknowns should be investigated, identified and the inventory updated accordingly. Did you unearth some lead lines that need replaced? There is funding available through USDA RD, or SLIB. Maybe combine a few items into a larger project. Have you completed an Asset Management Plan and or Capacity Development Plan for your system including the adequacy of your rate structure. Do you have meters? Are they calibrated? These items will be required to apply to SLIB and could affect your priority scoring for projects.

Have you addressed climate effects on your system (drought, wildland fires, abnormal heat or cold spells to name a few)? Regardless of your politics, we all live in Wyoming and have joked for years about our weather patterns (if you don't like the weather, wait 5 minutes), we have a tool that can help assess weather patterns and strategies. It is not based on any political agenda, simply historical patterns and how those may affect water quantity or quality and mitigation projects to address those items. We literally had just completed an assessment for Hartville when a wildland fire broke out and required the evacuation of the town twice in one week. The strategies developed in the assessment could not have been more timely!!

The state and other providers still have technical assistance available to answer the question: we filed our Lead Line In-

WARWSDOKU

3	6			5	9	7		4
9		4	3				2	
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The objective is to fill in the empty squares so each row, each column, and each 3x3 block contains the numbers 1-9 with no repeats.

ventory, now what? We can assist in getting you in touch with these resources, give us a call.

Emerging Contaminants – For the most part, this is the UCMR – 5 testing and in the very near future may include separately, PFAS testing of your water sources. Testing for PFAS is not a walk in the park either. PFAS testing may require specialized testing equipment, protocols and may be simpler to contract with a specialized contractor for these tests. As this area gets more clarity, our training and technical assistance folks will be getting the subject matter experts to come and educate us all in this area.

Wildland Fire Season – wow, what a bad year for Wyoming (and many parts of the country). At last count, over 800,000 acres had burned in Wyoming so far. Many crop acres have been affected which will probably put untold economic stresses on communities in the areas of the fires further exacerbating already very tight budgets. Continued drought will contribute to potential water supply issues going forward. Source Water Protection Planning can address mitigation strategies. Give us a call if your surrounding area would like to explore this free service.

New Mineral Development – Expanded Trona production, possible very large Rare Earth deposits being developed, Coal to Ammonia, continued wind and solar energy development projects may be added to the energy sector, as well as nuclear in the coming months and years. Rapid energy development is something Wyoming has dealt with many times and each time brings its own economic stresses, challenges and opportunity. Water for these projects will potentially affect aquifers typically used for energy development but the growth in communities could also affect water quantity or quality. Again, Source Water Protection Planning may be a good option to explore strategies and potential capital projects to help in mitigation.

Sanitary Survey Season – For the most part, the 250+ sanitary survey's for 2024 will be wrapped up soon. We are always available to assist with any corrective action needed or assistance with answering significant deficiency issues. Assistance with developing project plans as needed and assistance with the application process is always available from our staff through your association. Give us a call if you need help with sanitary survey result responses.

Cyber and Physical Security – Systems around the state continue to have issues with ransomware, system control breaches and outdated equipment and software. We will continue to provide training on recognizing potentially dam-

aging emails, phishing emails as well as strategies and inexpensive tools to help provide better security and prevention. Many of these tools may require updating software and computer hardware. There is funding available and our free cyber and physical security assessments can help identify where your system may need to update, upgrade and monitor for better security. The criminals are always getting better so continued education, and vigilance is the first and best line of defense.

We can assist you in all of the areas discussed and can bring industry specialists to you to help address these areas (in addition to all the other stuff you already have to worry about!!!!). Give us a call. Mr. P.

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Emergency Preparedness – the Electrical Climate Edition

*Disclaimer: This will not be an article about proving that climate change is real or not, nor will it discuss any potential causes of climate change.

The very real fact is that despite personal opinions about climate change, it is making waves in our operating world. One of the places where climate change is causing the most havoc is on the electrical grid. As temperatures rise and Americans continue to install central air conditioning (no judgement here, John and I installed one when we had to replace our furnace a few years ago and it has been life changing), the electrical grid is being stretched to its capacity and is riding the ragged edge of being able to provide the power our communities require.

To compound matters, electrical companies have been held accountable for fires caused by their infrastructure (again, no judgement, just stating a fact.) This turn of events has caused my local power provider to inform its customers that during National Weather Service Red Flag Warnings they will begin implementing a strategy called “Fire Protection Mode.” Fire protection mode is a wildfire prevention protocol that includes setting protective devices on the electrical system to automatically de-energize the lines if they detect a faulty current that could be from downed power lines. For customers, this means that during high temperature, low humidity conditions with strong winds (ahem, August), we can expect more frequent, longer duration power outages. I appreciate the concern that the power company has for not starting a wildfire that could easily spread and cause long term damage. However, power outages and surges wreak havoc on water and wastewater utilities.

So, if the grid is becoming less stable and reliable, and power companies are struggling to deliver adequate power to critical infrastructure like water and wastewater utilities, what is an operator to do? Let’s dig out that emergency response plan. You know, the one you updated in 2018, and certified to EPA that you’d checked the boxes? Or maybe it was back in 2006, when smaller systems were required to fill out a VSAT. Yeah, go dig that binder out, blow the dust off it, and let’s look at the critical infrastructure that was listed. Is the power company listed? Do you have an alternate power sup-

ply (generator)? Have you tested the generator under load, as well as the transfer switch? A transfer switch switches the power supply from grid power to generator power. It also prevents power from the generator from energizing the grid. Some generators have automatic transfer switches, while others are manual. It’s best to figure out what you have before the world goes dark. It’s also a safety thing. Without a transfer switch, generators can backfeed power to the grid during a power outage. This is a good way to cause infrastructure damage and injuries, particularly to linemen and women.

Who owns the electrical service? Where does the water or wastewater utility’s responsibility start? Often water or wastewater infrastructure is considered a commercial or industrial service which may have different rules about ownership than residential services. It’s important to know what portion of the line your utility is responsible for, as well as have a qualified electrician’s contact information included in your plan.

About that generator. Generators are incredibly useful tools. They also must be well maintained and routinely exercised to ensure they work when called upon. Some generators have programming to do a monthly start up and test. This is great, but not all tests involve the generator operating under load.

Load testing is a critical function to ensuring an alternate power supply can provide power during an outage. This testing should be done on a routine basis, not just when the generator is commissioned. Generators are also sized to the facility that they are meant to power. This means that if upgrades to your facility are planned, making sure that the generator can power the upgrades should be part of the design conversation.

In addition to ensuring that your generator is sized adequately, well maintained, and routinely tested, it requires fuel to run. What kind of fuel is required? Can that fuel go stale or degrade over time? Who is monitoring the fuel levels and responsible for getting fuel delivered? What sort of spill prevention is in place around the fuel storage?

Finally, generators are a huge investment. Think about a small collection system with multiple lift stations. Are there better ways to power them? One solution that Florida Rural Water Association came up with is to pair a standard generator that you can purchase at your local average hardware store with a VFD. Variable Frequency Drives (VFDs) basically fake three phase power. So, for infrastructure that has smaller motors (less than 5 HP) but requires three phase power, you can set up a smaller portable generator to travel between pumping stations. This requires a certain amount of timing, but can be a great solution. Particularly in low lying areas where a dedicated generator might become flooded and not be able to power the pump anyways.

In addition to the general inconvenience that is a power outage, insufficient power (brown outs) or surges are equally hard on electrical hardware and software. Power monitoring systems and surge suppressors are important devices to protect critical infrastructure from over and undercurrent situations.

Delicate infrastructure like HMIs, I/O cards and other SCA-DA devices need additional protection like backup battery power or UPC (Uninterrupted Power Supply). These devices provide several hours of power to critical electronics. They also can provide surge protection to these electronics.

What happens when the power comes back on? If the outage has been a longer one, the demand to the grid when the power comes back on can be almost overwhelming. With so many devices coming back online (not just water and wastewater stuff), there can be brown outs and surges as the grid gets running again. This is really hard on infrastructure, particularly larger pumps and motors. One way to protect your equipment is to manually turn off equipment during the outage and then turn equipment back on slowly as the grid stabilizes.

Reviewing the electrical portion of your utility is only one part of updating a system's emergency response plan. EPA has new templates for both water and wastewater utilities. If

you'd like assistance updating the plan for your system, or you just need to develop one (Hello, Significant Deficiency folks!), please contact us at WARWS. We would be honored to help!

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A Note From Randy Rumpler

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So, You Want to be a Water Operator? Stories From the Past

There is nothing finer than fixing a water break on your transmission line at 2am in the morning and completing it right to keep your town in safe drinking water.

It was 2 in the morning and our transmission line broke coming into town from Shell, Wyoming. All hands on deck. The wind was blowing, snowing hard and around 2 degrees outside. We dug and shoveled, fighting to see who was going to be in the hole, (it's warmer in the hole than standing on the bank). It was always Mike Cook and me fighting to jump in the hole to stay warm. A few hours later we got the water slowed down and the broken AC pipe cut out and a new piece of C900 and dressers swabbed with chlorine. We put some fresh dirt on the pipe and slowly turned the water on while flushing downstream. We finished the job around 7 in

the morning. Satisfaction of a job well done and taking care of our Town of Greybull and keeping the water flowing.

In one year, I ended up on call over Thanksgiving and Christmas. Not much happened on Thanksgiving but Christmas Day was another story. Christmas day I received several calls about frozen water lines in a business and a couple residences. The business line was frozen inside the building, and it was flooding. I arrived and could not get the curb stop to turn the water off. Below zero I waded inside the building looking for the shut off valve. I found the ball valve and got the water shut down. Thankfully there was not much damage to the building other than drywall needing to be replaced. Two out of the 4 houses had very little damage, but the curb stops did work, and I assisted in getting the lines thawed out and working again.

The morale of this story is the satisfaction of doing a good job, help the public out, oh and of course the overtime pay. Did it shy me away from doing this kind of work? No, I was happy to help the people, and I did the job correctly and the people I helped changed their attitude towards public works.

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*epa.gov

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3D Printed Water Plant Makes Its Debut at Casper Kids Fest

by Riata Walker

The Wyoming Rural Water Apprenticeship Program has been developing a 3D printed model water plant over the last year and finally had it on display for Casper Kids Fest in Casper on September 14th at the Ford Wyoming Center. The event drew hundreds of local families throughout the day. While activities were targeted toward children under 12, many parents also enjoyed participating in the event with a wide array of vendors and organizations being represented.

This was the first time Wyoming Rural Water's Apprenticeship Program has had a booth at this event, and WARWS Apprenticeship Coordinator, Riata Walker believes it was a success. "If we're going to build a pipeline of future operators in our state, we have to start exposing kids early and often to the industry," she said.

In addition to the model water plant, Walker had a jar display of various paper products (toilet paper, tissues, wipes and paper towels) in water to demonstrate how the different products do or do not break down in water. Kids were encouraged to grab and shake the jars to see if they could encourage breakdown of the materials and then Walker would talk to them about what is or is not flushable. "It was interesting to see how many parents didn't know about 'flushable wipes' and that you shouldn't actually flush them," she said. Then children were encouraged to take a water sticker with them. "I wasn't sure what to expect so I only had 80 stickers, and they were all gone long before the event was over," said Walker. "I'll definitely have more to offer next time."

The 3D-printed water plant model features four parts: the clarifier, flocculator, settling tank and filtration chamber. There are a few additional final touches coming on the model, but it's basically complete. While the model was a bit too advanced for the kid population, it was quite interesting for many of the adults in attendance. It will also be a great tool for outreach events targeting high school-age students and adults, as well as an education tool.

"I hope to get around to various events throughout the state with this new model. I think it can be used in a lot of different ways for outreach and education." Walker said she hopes the addition of more hands-on visual aids will spark more interest from Wyoming youth and young adults to the water industry and the many career opportunities within it.

If systems are interested in having their own model plant, please contact Riata Walker riatalw@warws.com, or any of the WARWS team for more information. Customization of the model is possible as well. Plans are in the works for a wastewater model plant – coming sometime in 2025.



Need Some Technical Assistance?

I bet you do, but it is hard to know what you need if you don't know what is available.

Recently I was asked why a system would need technical assistance from WARWS if they had engineering support. Let me be very clear here. Engineering support is not technical assistance and in most cases your system will need technical assistance to avail yourself of engineering support. Technical assistance can help you to actually scope a project that you want to submit for funding.

Scoping a project sounds easy, but as a TA provider I can assure you that it is not clear cut nor is it easy for the TA provider or the system. It is like being a detective. Often what the operator or clerk thinks is happening in a system is something entirely different. A good TA provider will help you document the problem by asking questions and helping you actually find documentation that you can submit with your funding request. Here are some questions to think about and expect your TA provider to help you answer:

Water Adequacy:

- Is the water source properly permitted through the SEO and what are the adjudicated water rights?
- How much water is pumped yearly (have you reported to the SEO as required)?
- How much water is sold?
- What is the estimated water loss?
- Is everything metered?
- How old are the meters?

Product Quality

- Does the system have any outstanding significant deficiencies?
- Is the system in compliance with DEQ requirements?
- What does the system sampling reveal?
- Are there trends of contaminants moving towards the MCL?
- Do you have the sampling plan provided by EPA?

Customer Satisfaction

- Does the system have a way to log complaints?
- Do you place the complaints on a map (Often this will find issues with the system that has not been previously diagnosed)?
- Is there any routine communication between cus-

tomers and the system?

Community Sustainability and Economic Development

- Does the system have a clear understanding of growth that is going to be taking place and are they communicating to decision makers what the infrastructure needs will be?
- Do they have a Source Water Protection Plan that will support economic growth, protect their source water and involve all stakeholders in the water system?

Employee Leadership and Development

- If there is a full time operator and clerk, are they encouraged and supported in training to improve skills (this is often over looked in asset management but staff are one of the systems most valuable assets.)?
- Are there job descriptions, performance expectations and a code of conduct?
- What is the turn- over rate for staff?
- What is the relationship between the operator and the clerk?
- What is the relationship between the operator, the clerk and the decision makers?

Financial Viability

- When was the last time rates were adjusted?
- What are the actual expenses and revenues of the system. This should include having all expenses properly charged to the correct accounts. Is all overhead expensed out to the utility?
- Are there reserve accounts and are they actually funded?
- Are the reserves adequate?
- Are rates and the condition of the systems assets correlated?

Operational Optimization

- Has there been an energy audit? (Energy is usually the second largest expense of a utility)
- Have they completed a water loss audit?
- Does the system log and monitor pressure, flow, static levels of the wells, source water temperature and Ph?

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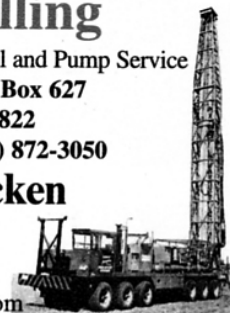
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Infrastructure Stability

- Does the system have an inventory of all of their components and the conditions of the components which can be used as the basis of an asset management plan?
- There is an understanding of replacement cost of components and it is tied into the budgeting process which in turn is tied into their rates

Operational Resiliency

- Has the system completed an all hazard vulnerability assessment which they can base their emergency response plan upon?
- Does the system have an all hazard emergency response plan that includes cyber security and climate resiliency?
- Does the system exercise the plan?

Stakeholder Understanding Support

- Does the system actively engage with customers and help them understand the value of water?
- Is the board or council trained and engaged?

So, if you don't have documentation or can't answer each one of these questions and issues, you need some TA. Don't get overwhelmed by all this. You do not have to do it all at once. We can help you prioritize what needs to be done and help you develop a strategy for your system. Every bit of

this is about building capacity. Capacity is what our funders want to see demonstrated. We are here to help and to provide you with the TA you didn't even know you needed. Give me or any of our WARWS staff a call.



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When the Crap Hits the Fan

As operators, we are always trying to plan for the problems that life seems to toss our way. In my case, Murphy's law has found me too many times to count. A few times in my life I have thought if it wasn't for bad luck, I would have no luck at all!

For many systems, a simple ERP can be priceless, not only for the operators, but the rest of the town's support staff as well. This can make life in general a lot more pleasant when Murphy comes knocking on your door. Here recently, I had the pleasure of seeing the importance of an ERP firsthand in one of the most beautiful tiny towns in our great state.

I always have loved the simple fact that in our state, most people do not count on big brother running to the rescue every time there is a major cluster that pops it's head up. We can come together as a team and rescue ourselves. Whether that is something as simple as needing a valve to fix a leak at three am on a Saturday, or a few jugs of chlorine to get by until new parts can find their way to a system in a frequent blizzard that Wyoming is famous for.

For Hartville, a raging wildland fire was the stress test that Murphy tossed their way. Fate was with the town on that summer day, not so long ago. As the operator was at the well house a few miles south of town, the fire started between the wellhouse and the town. The operator was busy working inside the wellhouse installing the last parts for a new loadout station of all things when the phone rang. The town clerk was calling to check on the Town and told the operator about the fire. Upon stepping outside the wellhouse, the thick clouds of smoke were rapidly filling the sky just up the way.

The moment we can all relate to, and truly a "oh crap" moment for sure! A few calls later, the entire county was on the way to help save the town! Teamwork, and all hands-on deck saved the day. Wyoming communities at the very best, showing off just a little!

The system did have an updated ERP, and the few simple steps outlined in the previous months may have helped save the town. The wells were turned on, and the water tank was kept full as possible for the duration of the near disaster that was looming around the town. As a small town, neighbor helped neighbor to get ready for the looming evacuation.

Town hall was tasked with aiding in the much-needed information to ease the confusion. Help came in droves, as all the residents were evacuated to the nearby National Guard Station in Guernsey. The wind changed several times that day and started gusting at all the wrong times.

The fire did reach the crest of the mountain staring down into town, until the firefighters bombed the fire into submission with some close in air tankers support. It did jump the road at some point despite the best efforts of the fire crews and took off heading mostly east towards the badlands. In total, approximately twenty-nine thousand acres went up in smoke, and thankfully no loss of life was reported.

In the following weeks after the crisis was over, the Town revisited their ERP and made some changes. This was not a blame game or finger pointing meeting, but a true discussion on making improvements to the ERP already in place

Some of recommendations that were introduced included a better line of communications with the county Emergency Response Coordinator (a vital "first call" need to know number). Possibly adding training for the operators, and the decision makers of the town, provided by the county Emergency Response team. Having some mock drills to ensure everyone knows exactly what to do the next time this comes up.

In this case, a wildland fire is not really a question of if, but more of a when it will happen again. Most of the state does tend to become a fire waiting to happen in the summer months, or at least a step away from some other disaster just waiting to happen. Be as prepared as possible, because when it hits the fan, most people are going to be very busy, to say the least.

A huge shout out goes to all of the incredible fire fighters, and the Camp Guernsey National Guard Center for all their help! Of course, a special thanks goes to Richard, an outstanding operator who chose to run towards the danger, instead of retreating to safety in the nearby town. Keeping Hartville in water in an emergency and providing water to the firefighters who desperately needed it.

If any town is under any illusion that some disaster can't happen to them, ya might want to rethink that opinion. Dust off your ERP sometime this winter when things slow down, and it's twenty below outside. Change outdated numbers, bring copies to the Town Hall meetings, inform your staff. If any help is needed in updating your ERP, please contact any WARWS staff for assistance. As always, be safe, and enjoy this amazing Fall that we are having!



Scrawny Girl's Friendship Muffins

by Michelle Christopher

One of the greatest joys in my life is food. Making food that tastes good, looks good and makes me feel good is one of the many reasons I get up in the morning. Even better than making food is sharing food with family and friends. Food celebrates life's milestones and comforts the tragedies. Making food to share with friends that celebrates milestones and promotes their health? Now that is a trifecta. I had to meet Kathy Weinsaft a few months ago to exchange some equipment. We planned to meet at Independence Rock Rest Area, which is a convenient halfway point. We planned to walk around the monolith, exchange equipment and catch up. The day also happened to be her birthday. I was not about to meet her empty handed, so I scoured my recipe books for a treat

worthy of the occasion. Kathy is a fan of healthy food, so I knew that the standard sweet treats would be politely accepted, but not truly appreciated. I also know that she's a fan of sweet potatoes, so I wanted to involve them in some way. Cue "Rise and Run," a recipe book by running friends Shalane Flanagan and Elyse Kopecky. They make many robust healthy foods to support runners that taste great. One of their most famous recipes is the Superhero Muffin and its many iterations. These muffins are high in protein, easily digestible and have tons of veggies in them, while still tasting amazing. I knew the Yam Spice Superhero Muffin was the perfect birthday treat. I tweaked the recipe slightly when I found out that I actually needed two sweet potatoes (I subbed in grated carrot) and measured the spices with my heart. To top the muffins so they looked like a birthday treat, I made a maple cream cheese glaze. Even though these are gluten free and vegetarian, they are highly recommended for celebrating, sharing with friends and just plain eating.

Muffin Testimonial – Hey everyone, it is Kathy, and I was the recipient of these glorious muffins. I wish you all had one while you are reading the Connection. I always feel guilty when eating muffins or cupcakes, but not this time. I took one bite and asked for the recipe. I kind of got teary eyed when I had my last muffin, but I can assure you my kitchen will be well stocked with the ingredients for these luscious bites. Do yourself a favor and give them a try.

Yam Spice Superhero Muffins *from Rise and Run by Shalane Flanagan and Elyse Kopecky

2 cups almond flour or meal

1-1/2 cups rolled oats

1 tsp baking soda

1 tsp ground cinnamon (ok, I used more like 2 tsp cinnamon, 1 tsp nutmeg and 1 tsp cardamom. But like I said earlier, measure with your heart)

½ tsp salt

½ cup chopped walnuts or pecans (optional)

3 eggs

2 c grated peeled sweet potatoes or yam— about 2 tubers (I nuked mine and smashed it, and subbed 1 c grated carrot for the missing yam)

1/3 c maple syrup or honey (if you prefer sweeter baked goods, bump this up to ½ c)


4 Tbsp (1/2 stick) melted butter

2 Tbsp grated ginger (If you don't have fresh, use 2 tbsp ground ginger, and measure with your heart)

- 1.) Preheat oven to 350°. Line a 12-cup muffin tin with liners or grease the bejeezus out of them. Liners work better.
- 2.) Combine dry ingredients in a large bowl.
- 3.) In a separate bowl, mix eggs, sweet potato, maple syrup, melted butter and ginger. Add the wet ingredients to the dry ingredients and mix until just combined. The batter is thick!
- 4.) Fill muffin cups and bake 30-35 minutes or until a knife comes out clean.

Maple Cream Cheese Glaze

Mix 1 package softened cream cheese with enough maple syrup to make a runny glaze. Add in ½ tsp ground nutmeg, 1 tsp vanilla and a pinch of salt. (If you want more of a frosting consistency, add powdered sugar until you get the consistency you like.) Drizzle over muffins, and if you're celebrating something, be sure to add sprinkles!



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Cost-to-serve Rates; the Journey Begins

Carl Brown, President
GettingGreatRates.com

Author's Note: This author has written on rate setting issues for years, progressing from the basic to the complex. It is now time for a refresher course for long-time readers, and back to the basics for first-time readers. This journey will take two, maybe three years. Buckle up.

Without cost-to-serve rates, your utility will go down the tubes. Yes, down...the... tubes.

There are two aspects to cost-to-serve rates:

1. Rate adequacy, and
2. Rate structure fairness.

To be clear, it is easy to determine when rates were inadequate – after the utility financially failed. But looking forward, no one can know with certainty what an adequate set of rates and fees would be. And rates are always political footballs. So, rate setters can only make best judgments about current and future costs and set or try to set current and future rates accordingly. You give it your best shot one year, do the same the next year. With experience, you will get better at it.

Because utilities are long-lived ventures, and people and businesses depend upon their investments being supported for a long time, rate setters need to set rates with an eye on the future. It is not good enough for current rates to be just high enough to cover current costs. Future costs will almost certainly be higher, and they will need to be covered. (See: Federal deficit spending, corporate bankruptcy, personal credit card debt.)

Setting adequate rates is the simpler aspect of cost-to-serve rates. Fair rates are tougher to achieve.

Rate structure fairness should always be considered when setting rates. Who costs how much to serve? Should they fully reimburse the utility, or should other ratepayers (or state and federal governments) subsidize them? What structure should be used to make that reimbursement happen? Who is going to “scream” the loudest about their bills? And how will that affect the elected officials who are the rate setters?

If rate adequacy is a tall hill to climb, rate structure is a mine field from the bottom to the top of that hill. One may wear you down. The other may blow you up. But that does not have to be the case whether your situation is simple or complex. This is where the rates issue goes from being a thought experiment, to being a practical matter. Time, place and circumstances matter.

Cost-to-serve rates, often called cost-of-service rates, are a simple concept with two aspects:

1. User charge rates are high enough to sustain the utility, and
2. Rates cause customers to pay for service based on the cost each customer, or class of customers, cause the utility to incur.

The concept is simple. The math and politics are often far from it.

A small service area, serving a uniform customer base is best served with a simple rate structure. The simplest example is a small subdivision containing a uniform size and type of home, housing a relatively uniform set of residents being served by a simple and cheap wastewater collection and treatment system. A flat rate structure will do the job. It is easy to understand, simple to administer and will dependably generate revenue needed to keep the utility sustainable. And the politics of rates in such places can be or should be more manageable. Call on the rural water association for help with the math and future cost predictions, but rates in this situation are mostly a “do-it-yourself” affair.

Then there is the large water service area, with a diverse set of customers, from the lowest volume small meter customer to the highest volume, big meter customer. This calls for a more complex set of rates to match cost reimbursement to the nature of its customers. This utility needs to look hard at the future to assure its rates are now adequate and will stay sustainable. The politics of rates in these places is almost always volatile, too. This is not an entirely do-it-yourself rates situation. You need help.

Rate Analysis and Training for Environmental Systems

“RATES” is a joint effort of eight rural water associations, including yours, and GettingGreatRates.com. GGR's forte is rate analysis. To learn about the RATES Program, visit <https://gettinggreatrates.com/>. While there, download the “Rate Setting Best Practices Guide” from the Freebies page.

Most utilities fall somewhere in between. If you are in between, is yours a do-it-yourself proposition? Or a get help situation? You ought to get help to decide that, then proceed accordingly. A good first step is to call the rural water association, tell them your situation and get their advice, and maybe their rate setting help. Or they might refer you to me or someone else if that is the next good step.

Surprise, big or small, most utilities' rates are inadequate or unfairly structured right now. Do not read articles for the next three years and then decide, “Hey, I have learned, we needed to fix this three years ago.” Fix it now.

On this journey, you will learn how to better assess rate “ad-

equacy," how to calculate simple rates, how to get proper rate setting help, and how to develop and show a productive "attribute" about rate setting. That's right, your attribute matters. Show the billpayers the proper attitude and it is almost certain to go well for you.

Sure, you do not like rate setting. But the author does, so stay tuned for the rest of the journey.

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

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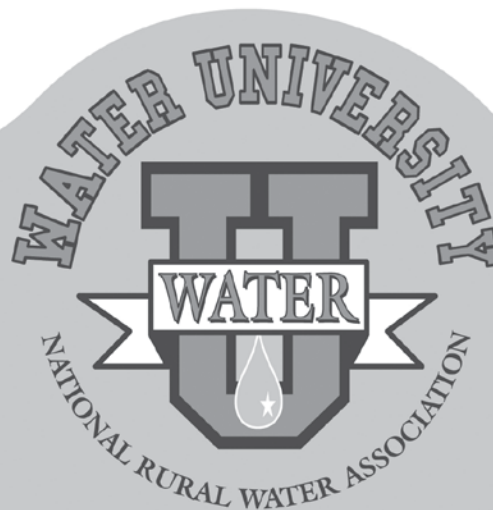


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Our Western Heritage

by Kathy Weinsaft

Pumpkins Mean Fall!

I admit it. I am a pumpkin nerd. Perhaps it is because my family didn't have a tradition of picking out the perfect pumpkin, carving said pumpkin or baking the seeds from the orb that I am obsessed with them. I swore that when I was a grown-up that I was going to celebrate fall with lots of pumpkins

Wyoming has a long tradition with the pumpkin. Native Americans grew them long before any of us got to this land. The Irish, who were some of the first immigrants, brought pumpkin seeds with them. In fact, the name, jack-o'-lantern, comes from an Irish folktale about a man named Stingy Jack. Irish immigrants brought the tradition to America, home of the pumpkin, and it became an integral part of Halloween festivities.

It is my annual tradition to pick pumpkins that represent each one of my pugs and myself. It isn't easy to find these goofy looking pumpkins, so I start looking forward in July to going to some of the fabulous pumpkin patches scattered around the state as soon as the weather turns.

If you happen to be in the Thayne area, be sure to stop at the Blue Ribbon Barn. I love this place year round because it overflows with locally grown produce, baked goods and craft items. In the fall, there are wagon rides for the kids, a hay maze and pumpkins of every size and shape to pick from. It also happens to be set against a magnificent mountain back drop.

One of the oldest pumpkin patches is Ellis Harvest Home. They have a different corn maze every year and I have to take children with me so that they can find the way out. They have a huge pumpkin patch that you can wander to pick just the right pumpkin(s) or you can look for that special orb already picked and in the yard. There are also games and lots of fall food available. It is located on Highway 26 a couple of miles west of Lingle.

Come fall, Gallagher Natural Beef and Produce, has more than meat. Located in Clark, WY, they have a six acre corn maze and alongside it a two acre pumpkin patch. They also have a hay bale maze, corn pit, and tasty concessions. What is there not to love about that?!

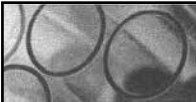
When I lived in Sheridan, I looked forward to finding the perfect pumpkins at the Koltiska patch. Admission is free and there are wagon rides, cookies, bottled water, the farm animal zoo and a bucket raffle. There is also great food and

fresh produce and some of the best pumpkins to pick around those parts. I loved it.

The closest pumpkin patch to me these days is located just outside of Casper. The Green Acres Corn Maze is the perfect way to celebrate a crisp autumn day in the fall. In addition to a towering, winding corn maze, this attraction is complete with a petting farm, pumpkin patch, gemstone mining, inflatables, a corn pit, an apple blaster and more.

These are just some of my favorite Wyoming Pumpkin patches, but I am betting there is one close to you. Wherever you are, get out there, enjoy fall, and pick a pumpkin.


It is, After all, Part of Our Western Heritage




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Operator's Corner

Water Questions by Michelle Christopher:

- True or false? Acids can injure cause injury, but not bases (hydroxides)
 - True
 - False
- Which of the following is not a common customer complaint?
 - Dirty, discolored or water with foreign particles
 - Taste and odor
 - Garden or lawn damage
 - Soft water
- What is C-factor in pipes?
 - The corrosion coefficient for metallic pipe
 - The external surface roughness of a pipe
 - The internal surface roughness of a pipe
 - The heat-transfer (thermodynamic) factor of a pipe
- Which is a limitation to using ozone (O₃) as a disinfectant?
 - Ozone does not provide a long-lasting residual
 - Ozone is ineffective at inactivating viruses
 - Ozone has a strong, objectionable taste
 - Ozone creates to many disinfection by-products
- Determine the Unit Filter Run Volume (UFRV) in gallons/sq ft for a filter 20 feet long and 16 feet wide if the volume of water between backwash cycles is 2.2 million gallons.
 - 110,000 gallons/sq ft
 - .1375 gallons/sq ft
 - 918.20 gallons/sq ft
 - 6875 gallons/sq ft



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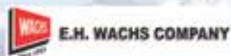
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$$\begin{aligned} \text{1. UFRV} &= (\text{Volume filtered, gal}) / (\text{Filter surface area, sq ft}) \\ &= 2,200,000 / (20\text{ft})(16\text{ft}) \\ &= 2,200,000 / 320 \\ &= 6,875 \text{ gal/sq ft} \end{aligned}$$

Water
1. B (false)
2. D
3. C
4. A
5. D

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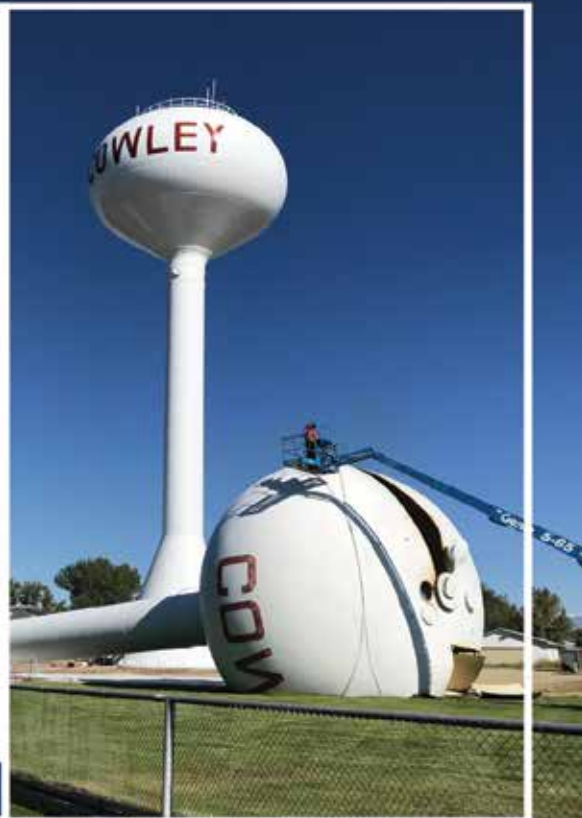
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