

# *The Wyoming* **Connection**

**Summer 2021**

**Wyoming is Open!!!**

**Ratepayer Support for Infrastructure**

**Microplastics – Here for Eternity?**







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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.

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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.

**Cover Photo** – Lookout Lake, looking up at the Snowy Range, specifically at the face of the range known as Sundial Slab which is home to marmots, pikas, and hordes of columbine flowers. Photo by Kathy Weinsaft



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## Wyoming is open!!!?

Having held steady at less than 500 active cases for several months, Wyoming is finally fully open. We could actually tell that from the early travel numbers. 80% increase in visitors to the northwest parks. Central Wyoming saw record sales for our hosting the State High School Track Meet over the last biggest year. The recently completed College National Finals Rodeo saw record attendance as well.

Those activities and events are statewide, and or national events and our case counts and active cases are holding steady!! What a relief!

For Rural Water, we intend to hold an unrestricted in person statewide training conference in August. Last year taught us how to do some new things to reach more operators for training opportunities while allowing cost savings to the systems. Our fee-based virtual training also set records during the pandemic which certainly helped us continue to provide the quality technical assistance Wyoming relies on. A hat's off to the operators for adapting to the new delivery system to maintain your training and license requirements!!

With the projected record visitation numbers, Wyoming public water systems have been busy getting ready to provide "Quality on Tap" drinking water throughout the winter. Most of the systems and my staff will tell you they have been busier during the pandemic than before. I used to be able to travel the state in some silence from 1 spot to the next, but thanks to Zoom or Teams, I sometimes was wrapping up a Zoom meeting on my computer and starting a Team meeting going on my cell while I was recording or listening (as I could) to a conference call on my office phone.

This spring, we have fielded a record number of inquiries from privately owned public water systems wanting to know how to check to see if their systems can handle the projected visitor load. Several camps or guest ranches are constructing "temporary" bath houses and or camper/tent areas to accommodate the requests for reservations. One ranch indicated they usually have 50 per night, but have reservations exceeding 100-150 every night till the end of September.

(A note to Dr. Fauci and the CDC, if the events in Wyoming from April to the end of July don't trigger a HUGE spike, the pandemic is over and isn't coming back – at least in Wyoming)

## WARWSDOKU

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

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.

I was able to attend NRWA National Training in early June. It was wonderful to be able to kick around with my counterparts from the other states, how they had or were adapting to the pandemic while keeping everyone's water flowing safe and affordable.

You could tell it had been a while since we had been able to talk, as each night ended just a couple hours before breakfast began. I realized just before I passed out on the plane back home that I had gone strong every day despite the lack of sleep. Good constructive conversation was greatly needed!!! Thanks to all my fellow Executive Directors around the country for great talks, advice and suggestions!

Also, thanks to all the operators around Wyoming. You proved your worth as ESSENTIAL EMPLOYEES every day through some record cold snaps, apocalyptic snows and just generally having to work around social distancing, COVID protocols and a constant demand to make sure the fire crews, law enforcement and hospitals had safe affordable drinking water so they could do their jobs during a very strange, lost year!!!

Hell yea! Wyoming is open!! Powder River, Let er buck!!!  
 Mr. P.

## The American Water Infrastructure Act and Emergency Response Planning

Congratulations on getting your Risk and Resiliency Assessment certified if you have a population over 3,300 and are a community water system. It is now time to do your Emergency Response Plan no matter what your population count is. All water systems must have an Emergency Response Plan no matter the number of clients served. If you serve 3,300 or more and are a community water system, these plans must meet America's Water Infrastructure Act (AWIA) requirements. Don't panic! You got this and WARWS staff is here to help.

Think of these new ERP's as the old ones on steroids. These plans include malevolent acts and natural hazards, while the old requirements only included intentional malevolent acts. If WARWS staff helped with your old plan, you have a leg up because we always included natural hazards including bored 16 year olds.

Your new Emergency Response Plan should be based on the risk assessment that you certified to EPA. It should include strategies and resources to improve resilience, including physical and cybersecurity. It should also include plans, procedures and equipment for responding to a malevolent act or a natural hazard.

Because we live in Wyoming, we sometimes suffer from a lack of imagination of what bad people might do. It is beyond my understanding why a foreign country would hack into Wyoming Rural Water's web site, but it happened. To help you think through some of these risks and mitigation strategies, I highly recommend this document from EPA [https://www.epa.gov/sites/production/files/2021-04/documents/baseline\\_information\\_malevolent\\_acts\\_508\\_03292021.pdf](https://www.epa.gov/sites/production/files/2021-04/documents/baseline_information_malevolent_acts_508_03292021.pdf). This document can also help you think through actions, procedures and equipment to lessen the impact of a malevolent act or natural hazard, including alternative source water, relocation of intakes and flood protection barriers, which all have to be included in your plan. The plan must also detail strategies to detect malevolent acts or natural hazards.

One thing that has not changed from the old plans is a requirement to coordinate with your local emergency planning committees (LEPC). Depending on what county you are in, this may be simpler said than done. These committees are creatures of county government. You can find a contact for them at your county's web site. Some LEPC's are more active and involved than others. The one

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thing for sure is that you don't want to make the acquaintance of your LEPC's contact during an emergency. Get to know them now. At the very least, document when you contacted them.

Another frequently asked question I get from systems is if they have to have their own Emergency Response Plan if they are included in the counties or the city that they are a consecutive to. The answer in most cases is yes. These plans, while helpful, do not address all the requirements of AWIA for the system. They absolutely should be coordinated, however.

There are all sorts of tools and resources out there to help you complete your AWIA compliant Emergency Response Plan. They range from paper forms to computer models. It depends on what you are most comfortable working with which one you choose.

Most of the computer models are complicated, however Texas Rural Water has developed a computer tool that I really like. It seems more thorough because it prompts you with questions that you might not think to address if you are using the paper forms. There is a nominal charge for this tool, but it may be worth it for your system.

If you would rather use paper forms that are free and have EPA's blessing, here is a template [Community Water System Emergency Response Plan Template and Instructions \(epa.gov\)](http://www.epa.gov). Please note, you must download the PDF file onto your device, open the document and click on the embedded word document link on the second page to access the ERP template.

There are also several training videos that will be very helpful to watch before you tackle filling out one of these templates. If you are interested in any of these tools and can't find them, just give me a call or email me. I will get them to you. There are also templates on the EPA web site for small systems that don't meet the AWIA population requirements but still need an Emergency Response Plan.

Remember, all Wyoming water systems, no matter what size they are, must have an Emergency Response Plan. You do not have to provide the ERP to whoever is doing your sanitary survey, but it must be available to the operator on-site. If you do not have an ERP at the time of a sanitary survey, you are subject to receiving a significant deficiency.

All Wyoming systems must include in their Emergency Response Plan at a minimum:

- Emergency contact phone numbers
- Procedures to respond to a water loss/water outage
- Procedures to respond to a water contamination incident.

If your system must meet the AWIA requirements, you have six months from the time you certified your Risk Assessment to certify your ERP. Many of our systems have told me they

are waiting until the June 30<sup>th</sup> deadline for risk assessment certification to submit. The ERP certification would then be due December 30<sup>th</sup>. Whatever day your system submits their certification, it is my strong recommendation that you utilize the EPA electronic portal to do so. This is the only way of submitting that you will receive a receipt for your submittal.

EPA will also remind you when your updates are due. AWIA requires updates every 5 years, but don't wait if changes have occurred within your system. I have reviewed too many existing ERP's with contacts for the system having long departed this earth. These are living documents and should be reviewed and updated often.

As we go through these months leading up to the ERP certification deadline, both EPA and WARWS will be doing a ton of training. Keep your eyes on our website and Facebook page, as well as announcements that we will be sending out via email. If for some reason we don't have your email and you are not getting announcements, will you please give us a call so we can add it to our database. We got this! And as always, we are here to help.



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## Microplastics – Here for Eternity?

An emerging contaminant on the horizon is microplastics. Whether intentionally created or the product of plastic objects breaking down, microplastics are the newest kid on the pollution block, and to be honest, we don't even know what we don't know about them.

So, what are microplastics? While there is no scientifically agreed upon definition, most sources define them as plastic particles smaller than 5mm in diameter. That's about the diameter of a grain of rice. There's an even smaller group of microplastics called nanoplastics. These particles are less than 1µm in diameter. A micrometer is approximately the thickness of a thin sheet of paper, like most Bible pages, or the toilet paper used in WYDOT rest areas. Given this range of sizes, microplastics may be visible or not. Their size will determine what their environmental impacts will be.

Microplastics aren't exactly new. Tiny plastic beads (primary microplastics) showed up in personal care products 50 years ago and have been used ever since as exfoliants in face scrubs and peels and grit in toothpaste. Commonly referred to as micro-beads, these plastic products were banned for use in cosmetics and personal care products in 2015. Primary microplastics are also used in industrial processes. Secondary microplastics come from the fragmentation of larger plastics – shopping bags, water bottles, milk jugs, clothing, etc. These secondary plastics may come in the form of fragments of the original product, or further broken down into individual fibers. Any form of plastic can be a microplastic, but the most common forms are polyethylene terephthalate (PET) and polypropylene (PP). PET is commonly used for beverage bottles, and PP is used for packaging, textiles and many other products.

Identifying and quantifying microplastics is a difficult task. Currently, the method for analyzing microplastics is to pass the material (water, soil, etc) through a 5.6mm sieve, dry the sieved portion, use an oxidant on the mass to digest any organics and then density separation is used to float out the plastic particles. Then the product is filtered and dried. Finally, the sample is analyzed a microscope and tweezers to identify and pick out the plastic bits.

Microplastics are found in the soil, oceans, fresh water and air. Given its prevalence in the environment, it is also found in living organisms, both those we consume, and our own bodies. Because these particles are so small, they are easy for animals to ingest through drinking water, or if they are present in the animal's environment. These particles may not

be excreted but get trapped within the organs of the animal. If the animal is consumed by humans, the human ingests the plastics as well. Fruits and vegetables can also be sources of microplastics, particularly those packaged in plastics. Tiny particles of the packaging can wear off and adhere to the product that is to be consumed. Fruits and vegetables can also uptake nanoplastics through the soil and water. Bottled water isn't safe from microplastics either. OrbMedia conducted a survey of 11 popular bottled water brands from around the world. Their research showed that 93% of the samples tested contained microplastics. Their research also showed that the bottled water samples contained 50% more microplastics than tap water.

Since there's no escaping microplastics, are they harmful? The answer is a classic... maybe... According to the World Health Organization (WHO) 2019 report on microplastics, "there is insufficient information to draw firm conclusions on the toxicity of plastic particles and particularly the nano size particles, no reliable information suggests it is a concern." There are some questions concerning breakdown of plastics into toxic substances such as bisphenol-A or endocrine disruptors, or particles causing physical damage. Currently, there are not enough credible studies to make a determination. Even if the microplastics aren't causing harm to humans, they may be damaging critical components of ecosystems, such as plankton and algae.

The good news is that standard filtration processes are capable of removing microplastics from drinking water. Also, conventional wastewater treatment plants do a reasonable job of removing them as well. The problems come from simple systems such as lagoons, or treatment plants in an upset condition. These may discharge microplastics to receiving streams. Another concern is what will be done with the solids? If they are land applied, the microplastics will remain in the environment, and capable of being transported to another water source.

So – we know where microplastics come from, we know that they are prevalent in the environment, and we aren't exactly sure what health risks they pose. Now what do we do about it? This is the million-dollar question. The simple answer is to stop creating the problem. The actual answer is much more intricate. As a society, we must change our behavior. We need to reduce the amount of new plastic we purchase. We have to stop using single use plastics and use more natural fibers. We must create an economy based around reusable products rather than purchase and toss products. Recycling is a great idea, but it needs to be sustainable – which means not trucking or shipping the waste to other countries because factories are unsightly. We also need to change product packaging so that it can easily be recycled. I keep saying "we". And I sincerely mean it. "We" can't keep waiting for something to happen. While this overcoming the plastics issue seems daunting, I challenge you make one tiny change to reduce the amount of plastics you are consuming. I switched from single use coffees to making coffee (locally sourced, that I bring home in my mason jar) with my French press. It's not much, but it's a start.



## Ratepayer Support for Infrastructure

By Sam Wade, NRW

While aging infrastructure is a well-known and mounting problem for the water industry, underinvestment can have devastating long-term consequences for the U.S. economy and the American public. While there are various governmental funding programs at the state and national levels that will assist in closing the gap, customer fees will continue to be the primary source of infrastructure funding, and rate increases will be needed to finalize projects and maintain that infrastructure over its lifespan.

The 2021 Infrastructure Report Card, released in March, revealed an \$81 billion water infrastructure investment gap for 2019 alone. Should this underinvestment continue, the annual funding gap is expected to grow to \$136 billion by 2039. American Society of Civil Engineers (ASCE) has modeled two investment scenarios over the next 20 years to illustrate dramatically different potential outcomes. "Failure to Act" would result in widespread water service disruptions, making industries less efficient and profitable, and leading to a \$2.9 trillion decline in the gross domestic product and over 630,000 fewer jobs by 2039. Costs to U.S. households would increase by seven times and communities would suffer more frequent service interruptions, street flooding and other neg-

ative effects. Conversely, in the same timeframe, "Closing the Gap" would benefit the U.S. economy and its citizens with the creation of 800,000 new jobs, increased disposable income of \$2,000 per household and a \$4.5 trillion increase in gross domestic product.

Smaller water utilities face greater financial challenges than their large counterparts, having less access to capital and limited reserves, even prior to the Covid-19 pandemic, which has resulted in unprecedented economic hardship for the rural water sector. A 2020 sustainability assessment by the National Rural Water Association concluded that small systems, which comprise 91% of the community water supply inventory, have revenues to cover their operations and debt ratio, but that revenue is not sufficient to fund major infrastructure projects due to lower economies of scale and the inability of the ratepayer to afford increased cost for service.

In general, the public often takes their utility service for granted, which hinders the process for rate increases needed to implement infrastructure improvements and maintain a financially sustainable utility service. However, many systems are looking at public-private partnerships to offer better service and protection, thereby reinforcing positive customer relationships and experience that can result in a greater appreciation for the utility and its vital role in the community.

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For example, customers are experiencing increasing numbers of service line breaks and leaks, and the Environmental Protection Agency (EPA) estimates household leaks can waste more than 1 trillion gallons annually nationwide. That's equal to the annual household water use of more than 11 million homes. One of the most negative customer relationship events for a water utility occurs when a customer receives an extraordinarily high water bill, usually caused by a service line leak or plumbing problem. The customer immediately expects the utility to absorb the increased bill, as 70% of Americans are not aware of their responsibility for the private-side service line. When explained, the customer may accept that responsibility, but the conversation is typically confrontational in nature and the customer is generally dissatisfied. Plus, the utility might have to absorb a bad-debt expense in the event the customer simply cannot afford to pay.

But what if, in that conversation, the utility could say, "No problem, it's covered"? The customer would be happy, appreciative and supportive of the system because their needs and expectations were met. Additionally, the interaction between the ratepayer and the staff would be positive, and the system would be paid for the water lost from the leak. The result is a happy customer, which equals a supportive ratepayer.

The ServLine Leak Protection Program offered by HomeServe and provided through the utility delivers this experience to utilities and their customers. Data from 150 systems across the nation who have implemented this program demonstrates that, when this program is offered, the individual ratepayers' participation rate is 96%. For those customers who have had claims, satisfaction with the utility is increased by 70%, on average.

In addition to covering the water bill overage for the custom-

er, the ServLine program eliminates the financial loss for the forgiven portion of the water bill for systems that include coverage subsidies as part of their leak adjustment programs. For systems that operate as lending institutions, requiring full payment but carrying the debt, ServLine eliminates this process and the utility resources required for administration, while providing the most positive customer outcome. According to Kenny Baird, General Manager of LaFollette Utilities, "Working with ServLine has been a win-win for our customers and the utility. It has saved both the utility and customers thousands of dollars, and the process has been easy and efficient, with claims being handled promptly."

The ServLine program is a good example of a partnership that helps to strengthen the relationship between the system and its customers by providing education, valuable protection and exceptional service. Creating allies through positive and transparent customer relationships is a crucial component of obtaining public support for the funding required to address aging infrastructure for the foreseeable future. Water companies interested in offering protection to customers can visit [www.servline.com](http://www.servline.com).

#### About Sam Wade

Mr. Wade began his career in rural water in 1972 as a water and wastewater systems operator and city manager in Minnesota before becoming the manager of the Minnesota Rural Water Association in 1982.

In 1985, Mr. Wade joined the National Rural Water Association (NRWA) as the Training Director and became the Deputy CEO and Chief Operating Officer two years later. For more than 30 years Mr. Wade helped provide the leadership needed for the NRWA to train, support, and promote water and wastewater professionals that serve rural America. Mr. Wade retired from the NRWA in 2019 and now works as an industry consultant.

Household leaks can waste nearly  
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of water annually, nationwide.\* That's equal  
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# Operators Corner

## Wastewater Questions by Mark Court:

- What is one way that plumbers can create obstructions in the collection system?
  - Deterioration of other utility pipes
  - Ground movement shifting the pipe
  - Penetration of roots into pipe connection
  - Placement of building sewer tap connection that protrudes into the main building
- What is one common sewer problem encountered by collection system operators?
  - Accurate maps of the system
  - Peak flow velocities
  - Proper lift station operation
  - Root intrusion
- What can produce harmful and obnoxious gases in collection systems?
  - Air curtains
  - Scouring velocity
  - Solids buildup
  - Turbulent flows
- What is a benefit of recording collection system cleaning operations?
  - A detailed history makes future cleaning operations easier
  - Complete records prevent toxic atmospheres
  - Records show all possible problems in the system
  - Reviewing records keeps operators in the office longer
- What is the flow in cubic feet per second (cfs) in a 10-inch diameter sewer pipe flowing full? A dye indicates that the flow velocity is 1.5 feet per second
  - 0.67 cfs
  - 0.79 cfs
  - 0.82 cfs
  - 0.93 cfs

## Water Questions by Michelle Christopher:

- Nitrification can lead to disinfectant residual decay and result in bacterial growth and a(n) \_\_\_\_\_.
  - Increase in pH
  - Increase in alkalinity
  - Reduction in oxygen
  - Reduction in nitrogen
- Circuit breakers, compared to \_\_\_, have a much \_\_\_\_\_. This means that they are capable of interrupting the flow of considerably \_\_\_\_\_ than could be interrupted by \_\_\_\_\_.
  - Fuses, higher interrupting capacity, higher voltage,

fuses

- Switches, lower interrupting capacity, higher current, switches
  - Fuses, lower interrupting capacity, higher current, fuses
  - Switches, higher interrupting capacity, higher current, switches
- Destruction of pathogenic organisms is directly related to \_\_\_\_\_.
    - Chlorine concentration
    - Chlorine concentration, temperature and pH
    - Chlorine concentration and contact time
    - Chlorine concentration and pH
  - When two or more elements are bonded together to form a(n) \_\_\_\_\_, the resulting particle is called a \_\_\_\_\_.
    - Covalent bond, molecule
    - Compound, molecule
    - Ionic bond, compound
    - Emulsion, mixture
  - Water is flowing through a pipe at a velocity of 1.75 ft/s. If the flow through the pipe is 0.35 ft<sup>3</sup>/s, what is the diameter of the pipe?
    - 3.0 in
    - 4.0 in
    - 5.0 in
    - 6.0 in

## Answers

### Wastewater

1. D

2. D

3. C

4. A

5. C

- Convert the pipe diameter from inches to feet.
- Take the pipe diameter in feet and square it.
- Multiply 0.6889 by 0.785
- Multiply 0.5407865 ft<sup>2</sup> by the velocity

### Water

1. C

2. D

3. C

4. B

5. D

- Determine area by dividing flow (ft<sup>3</sup>/s) by velocity
- Determine diameter by dividing area by 0.785
- Convert feet to inches by multiplying by 12. 0.5 x 12 = 6.0 inches

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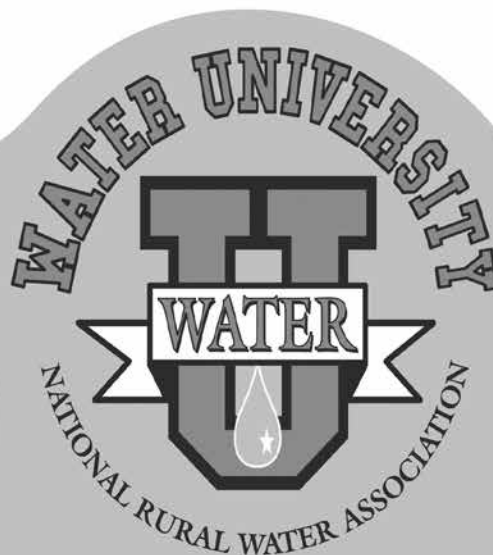


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# RURAL WATER *Loan* FUND



The **NRWA Rural Water Loan Fund (RWLF)** is a funding program specifically designed to meet the unique needs of small water and wastewater utilities. The RWLF provides low-cost loans for short-term repair costs, small capital projects, or pre-development costs associated with larger projects. The RWLF was established through a grant from the USDA/RUS, and repaid funds used to replenish the fund and make new loans.

## Reasons to apply

- Reasonable interest rates
- NRWA does not charge administrative or processing fees
- Straightforward application process
- Quick turnaround

## Eligible Projects Include

- Pre-development (planning) costs for infrastructure projects
- Replacement equipment, system upgrades, maintenance and small capital projects
- Energy efficiency projects to lower costs and improve sustainability
- Disaster recovery or other emergency loans available

**Contact your State Rural Water Association or  
National Rural Water Association for  
help with the application process.**

## For More Information:

Applications, information and forms can be downloaded from the NRWA website, [www.NRWA.org/loans](http://www.NRWA.org/loans).

Email applications to:  
[nrwarwf@nrwa.org](mailto:nrwarwf@nrwa.org)

Or mail to:  
Rural Water Loan Funds  
2915 South 13th  
Duncan, OK 73533

For help, please call 1.800.332.8715 or email [nrwarwf@nrwa.org](mailto:nrwarwf@nrwa.org).



National Rural Water Association working in conjunction  
with US Department of Agriculture/ Rural Development



## The Cycle Continues

Over the past couple of months when I stop into a water system the first thing the operator(s) have said to me is “I thought you had retired”. The reason you haven’t seen me for about the last 6 months or so is I was out on medical leave, nothing to do with COVID, that would have been short and simple. I’m just getting older, and life happens. Doing better now and no, I’m not retired, yet anyway.

I was limited on what I was allowed to do during that time and it liked to drive me up a wall and I couldn’t wait to get back to work. This time made me think of how much longer I CAN continue to work.

Once back to work, I learned of water and wastewater positions that cannot be filled because no one wants to work because they can make, no get paid as much, most cases more by not working. This is disturbing to me, and greatly increases the likelihood of even a greater shortage of qualified personnel to replace the number of water & wastewater operators my age getting ready for retirement. Who will replace me? Then I think back and believe that this too will pass, as it has before in the ‘Cycle of Life’.

This brought me back to an article I wrote about 12 years ago and I thought it should be revisited. Today, most Americans would say that we are in an economic down turn and they are looking for the bottom. As for the media, well, they like doom & gloom, so I won’t go there. But just like it was back in the 70’s & 80’s when the economic and political picture was similar to what it is today, I got my beginning in the water & wastewater industry. You can call this present time period we live in whatever you want, but I see the trends of today as a small part of a bigger picture, the ‘Cycle of Life’.

Forty years ago during the boom years of the 1970’s, I was twenty something working in the Wyoming mining and oil field industry where jobs were plentiful and the pay was very good. Most of us at that time weren’t interested in water & wastewater employment because it couldn’t compete with the pay scale. Then came the bust years of the late 1970’s & early 1980’s.

Like so many others I found myself unemployed and looking for work, not much different from what we see today. Unlike the fair-weather workers that were here just for the money, I stayed in Wyoming because this is my home and where I was going to raise my children. I took odd jobs where I could find them for a couple of years, most being handyman jobs that lasted a week or two.

I finally landed a job with Wyoming State Parks and one of the first requirements of the job was to secure water & wastewater licenses for the operation of the park’s water systems and wastewater lagoon.

We survived the first few years, as the pay was not very good, but it kept us in Wyoming. We soon became accustomed to the change in our lifestyle and things didn’t look so bad and the future looked brighter. Soon, the economic times were better, and I could have moved back into the mineral industry to get better wages, but I liked working in the water and wastewater field and was invested into a secure job with health insurance and a retirement plan (if there is such a thing as secure retirement).

Staying in the water/wastewater field, I took a job as a small Wyoming town’s Public Works Director and then the Project Manager for the construction of a new water district. Both jobs requiring the skills learned as a water/wastewater operator and the licenses I secured over 30 years ago. About 14 years ago, I was hired by Wyoming Rural Water as a Water Circuit Rider, continuing to work in the water & wastewater field providing technical assistance, but more important, I’m passing on my experience to younger operators.

At that time, one topic of concern we discussed numerous times at staff meetings was that over 65% of the Wyoming water & wastewater operators will be eligible for retirement within 10 years. Well, that ten-year time is here.

While visiting water systems through out Wyoming, I found common ground with the older operators, most either ready to retire or have retired. Like me, most of these operators got their start during the “bust” years of the 70’s & 80’s. The problem we discussed at our staff meetings was that we were not seeing their replacements coming up the ranks. This was really evident at our yearly Spring Training Conferences, but over the last few years I have notice something. I am beginning to see younger operators taking a real interest in our industry. This is encouraging, but I have two questions.

Are these young operators ready and willing to make the commitment of Quality on Tap to this industry that so many did twenty, thirty even forty years ago? And;

Are the water & wastewater systems ready and willing to make the commitment to their future by investing in our youth?

I have a bit of advice here for decision-makers. Quality workers are available during hard economic times, but the best of these future Chief Operators will be taken by those systems that plan ahead and look to the future to secure and keep quality workers.

Now I know that there are at least a million different views and comments on what’s happening economically and socially, but one need not look very far in the past to see that history does repeat itself again and again. The question here is where we are in the water and wastewater ‘Cycle of Life’?

# 30<sup>th</sup> Annual Technical Conference

August 24<sup>th</sup>-27<sup>th</sup>, 2021

**Host: Ramkota Hotel and Conference Center, Casper WY**

800 N Poplar St, Casper, WY 82601 (307) 266-6000

Reservations: [www.ramkotacasper.com](http://www.ramkotacasper.com) - \$80 rate

Includes complimentary hot breakfast buffet, Manager's reception Mon-Thurs 5:30-6:30pm

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. **Control Alt Delete** is the theme for this year's training. We need a reset for ourselves and our systems. This training will do it. It will be held at the Ramkota in Casper. We will spend the mornings getting needed updates and our rule hours. During the afternoon, classes are being planned for outside 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. We will blow up pipe in one class and rehab culverts in another. Bill Mixer, the legend, will even be there to help us do locates. 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, WARWS*

## Make a Difference

Two WARWS Board of Director positions will be up for election during the Spring Conference. The Northeast District includes Sheridan, Johnson, Campbell, Crook and Weston counties. The South-west Region includes Teton, Sublette, Lincoln, Uinta and Sweetwater counties. To be eligible to sit on the board, you must be an employee or official representative of a member system. Board responsibilities include quarterly meetings, two of which are done at conferences. The other two by phone. If interested, submit a letter-of-intent to Mark Pepper, or email [markp@warws.com](mailto:markp@warws.com).

## The Best Tasting Water in Wyoming

We invite every system attending conference to enter "The Best Tasting Water in Wyoming" contest. The winning system will be hosted (airfare, room, and meals, for one representative) in Washington D.C. at the National Rural Water Rally 2022 by the Wyoming Rural Water Executive Director and Wyoming National Director. The delegation will meet with officials from the USDA Rural Development, USEPA and will visit with Wyoming's US Senators and Representative to discuss water issues facing systems in Wyoming. To enter, bring 1/2 gallon of your water, in glass and on ice to the registration booth when you check in.

## Exhibit Hall Information

Set up can begin Tuesday evening from 3pm-5pm. The Exhibit Hall officially opens at the 10:00 am break on Wednesday. Tear down can begin Thursday after the 3:00 pm break, or you can stay till the end. (many do). The easiest way to enter is through the Exit door by Booth #21. Please check in with the Registration Booth to get an Agenda and name badges.



# CONFERENCE REGISTRATION

30<sup>th</sup> Annual Training Conference

August 24<sup>th</sup>-27<sup>th</sup>, 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 24<sup>th</sup> (No Fee) \_\_\_\_\_**

## **FULL REGISTRATION August 24<sup>th</sup> - 27<sup>th</sup>**

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

<b>Member</b> – Early Bird, payment included (By 7/15/21) .....	\$395	_____
<b>Member</b> – After 7/15/21 .....	\$445	_____
<b>Non-Member</b> Early Bird, including a new Individual Membership through 12/31/21.....	\$505	_____
<b>Non-Member</b> after 7/15/21, including a new Individual Membership through 12/31/21.....	\$555	_____
<b>Decision Maker / Clerk</b> .....	\$150	_____

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

### **One-day only registrations**

	<b>Member</b>	<b>Non-member</b>
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](http://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](http://www.warws.com)



**Wyoming Association of Rural Water Systems**  
**30th Annual Training 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](mailto: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](mailto: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](http://www.ramkotacasper.com) or call 1-307-266-6000

**Return this form with payment to:**

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Fax: (307) 436-8441 or Register on-line: [www.warws.com](http://www.warws.com)  
For more information call our office at (307) 436-8636

# 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](http://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!

## 2021 Program Details:

- Limited to water/wastewater utilities that are current members of a State Rural Water Association
- There is no limit to the number of vehicles that can be purchased under the program
- Incentive pricing is deducted off the factory invoice
- Fleet vehicles must be in service for a minimum of 12 months or 20,000 miles
- Vehicles must be registered and operated in the 50 United States
- Call your State Association today to get your Fleet Identification Number (FIN)

Eligible Vehicles	Incentive
Edge	\$2,500
Escape SFWD	\$1,500
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

# A Note From

## Johann Nield

Circuit Rider  
johannn@warws.com  
307-751-1138

### The Year That Was

As a WARWS Circuit Rider, it inspires me to see how dedicated you all are to providing safe drinking water and clean wastewater. During this Covid-19 situation, I have traveled to your town, cities, subdivisions, water districts, well houses, and saw how you all have adapted to the ongoing compliance quagmire facing us today. Wyoming Rural Water's job is to help you and your system in any way possible from understanding the new rules that EPA or DEQ level on our water/wastewater lives to everyday maintenance problems and providing a training base for all operators.

But in this article and future articles I want to highlight your systems and personnel thru the photographs I take while visiting your system. The following is a few from the past and I will be adding more as I see you in person.









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E-mail [garymc@sargentirrigation.com](mailto:garymc@sargentirrigation.com)



# Repair and Replacement

Carl Brown, President  
GettingGreatRates.com

Water and sewer utilities (all others, too) live in a sea of concepts and needs:

- Remaining sustainable as they provide healthful and useful service,
- Maintaining regulatory compliance,
- Assembling annual budgets,
- Setting adequate and fair rates,
- Maintaining good staffing,
- Operating and performing maintenance,
- Doing equipment repair and replacement, and
- Making capital improvements and acquiring financing for them, to name several.

(Equipment) Repair and replacement (R&R) is the act of refurbishing and renewing equipment within a system of equipment and facilities (a utility) to keep the utility functioning as desired.

Thus, R&R does not include “small” items that should be included in the annual budget. It also does not include “big” items, like replacement of an entire treatment plant that likely would be paid for with outside funding (grants and/or loans).

These things plus others roll up into the notion commonly called, “asset management.” Asset management is a simple notion that is complex to pull off. But done right, it is not that hard. Let’s start with one part, repair and replacement (R&R).

Think of your entire water system. There is no clear “boundary” between R&R, capital improvements and operations and maintenance of the system. You decide in which “pot” to place each activity. But if we back up one degree to the recoating of a water tower – that should be a bread and butter R&R item for all water utilities. Does your utility save to pay for tower recoats when their time comes? It should. And it should save for other R&R items, too.

The following questions lead to good R&R:

- What do we have?
- When did we put it into service?
- What is its expected useful life, therefore, when will we likely need to replace it next?
- What will it cost to replace it?
- What must we save annually, to do all needed R&R?

That list takes in a lot of asset management tasks, doesn’t it?

Answering Questions 1 through 4 takes equipment and systems knowledge, experience, record keeping and some research. An experienced operator is well-suited for that. But operators, do not stop there. You should answer Question 5, too. I suggest using the spreadsheet called “ReplacementScheduler©,” a free download at <https://gettinggreatrates.com/Freebies>, to do that simply.

Why should operators calculate the annualized cost? Simple. The budgeters and rate setters need the annualized costs so they can budget for them and set rates to cover them. Having operators calculate that cost makes the budgeters’ and rate setters’ jobs easier, and defensible. Proper rate setting leads to proper R&R, so I hereby deputize you to advocate for proper rate setting.

In the following, I will describe replacement scheduling using ReplacementScheduler© as the example medium.

1. First, in a table not shown here (to save space), enter basic utility data and information, like the name of the utility, utility type, interest rates, and the replacement fund starting balance.

10 Year Replacement Cycle					
Year Beginning	Shared Generator on Trailer, 50% Water, 50% Sewer	Whitco Raider 4030H pressure washer	Shared 2013 Ford F250 4x4, 50% Water, 50% Sewer	Shared 2013 Ford F350 with crane, 25% Water, 25% Sewer, 50% Other	2013 GMC Utility Van
7/1/2020	\$0	\$0	\$0	\$0	\$0
7/1/2021	\$0	\$0	\$0	\$0	\$0
7/1/2022	\$0	\$0	\$0	\$0	\$0
7/1/2023	\$0	\$0	\$0	\$0	\$0
7/1/2024	\$20,000	\$0	\$0	\$0	\$0
7/1/2025	\$0	\$0	\$25,000	\$25,000	\$30,000
7/1/2026	\$0	\$5,595	\$0	\$0	\$0
7/1/2027	\$0	\$0	\$0	\$0	\$0
7/1/2028	\$0	\$0	\$0	\$0	\$0
7/1/2029	\$0	\$0	\$0	\$0	\$0
7/1/2030	\$0	\$0	\$0	\$0	\$0
7/1/2031	\$0	\$0	\$0	\$0	\$0
7/1/2032	\$0	\$0	\$0	\$0	\$0
7/1/2033	\$0	\$0	\$0	\$0	\$0
7/1/2034	\$20,000	\$0	\$0	\$0	\$0
7/1/2035	\$0	\$0	\$25,000	\$25,000	\$30,000
7/1/2036	\$0	\$5,595	\$0	\$0	\$0

Average Inflation Rate for the Following Water System Equipment for the Term of 2.00% This Replacement Schedule					
Average Interest Rate on Balances Invested for the Term of This Replacement 1.00% Schedule					
Average Interest Rate on Amounts Borrowed for the Term of This Replacement 3.00% Schedule					
Year Beginning	This Year's Costs in Current Dollars	Future Annual Inflated Net Costs	Interest Earned (or Paid) on Prior Balance	End of Year Balance in Future Dollars	Minimum Desired End of Year Balance in Future Dollars
7/1/2020	\$20,000	\$20,000	\$0	-\$20,000	\$122,955
7/1/2039	\$38,000	\$55,359	\$1,214	\$152,946	\$179,122
Required Annual Deposit to Replacement Account				\$85,712	



2. Next comes all the what, when, life expectancy and cost data you came up with. You enter that data in replacement cycle sections of the tool. Table 1 shows example 10-year replacement cycle data. Replacement cycles range from one through 20 years.

Note: The displayed tables are a small part of the actual spreadsheet.

a. The yellow highlighted cells are where you would enter replacement data. The tool repeats replacements in later years, on the schedule you choose.

b. Note – in the example, the costs of some items were only attributed to the water utility at 50 percent because those items are shared equally with the sewer utility. The sewer utility should have its own replacement schedule and pay for the other part of those costs. In fact, you should prepare a replacement schedule for all important equipment for each utility or major service your entity (district or town) provides, so every function can pay its own way.

3. Next comes the annual annuity calculation, shown in Table 2.

WARWS Circuit Riders know things about R&R needs and scheduling that you do not. And they will be glad to help you. Call or e-mail them, get their help and advice, and start doing great R&R right away.

4. The last line of Table 2, the “Required Annual Deposit to Replacement Account” amount of \$85,712 is the annual savings needed to pay for everything in the example schedule (much of which was not shown), cover inflation and end up with a balance of nearly \$153,000 in 2039. You decide your own future balance target.

a. If all this R&R is to happen, when the budget preparers put together each year’s budget, they need to include the annual savings amount as a budget line item.

b. And that amount must be deposited into a savings account, or otherwise be saved, to pay for replacements as they come due.

ReplacementScheduler© is not a dumbed-down tool. I extracted it from my rate analysis template and just gave it some highlighting and instructions to guide do-it-yourselfers. In fact, if I were to analyze your rates, you could send me your R&R schedule and that data would transfer straight into my template.


Sustainable utility management is complicated. It is

R&R scheduling is more complex than discussed here. For full coverage, visit <https://gettinggreatrates.com/Freebies> and download the “Rate Setting Issues Guide.” R&R is covered in Chapter 13.

based on sound equipment repair and replacement. That requires systems and equipment expertise. As a long-time operator, you should have that in your head. You just need to get that into a form that decision-makers and others can also see and buy into. If they are to set aside substantial dollars every year, they need “proof” of need. ReplacementScheduler© does that proving, so check it out.

Start doing sustainable repair and replacement scheduling and you will be on the path to a sustainable utility.

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.




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# Our Western Heritage

by Kathy Weinsaft

## Continuing East!

Are you awake? Good because we have a big day ahead of us. We better get some fuel in our tummy at the Silver Spur before our Eastern adventure continues. The Silver Spur in Sheridan is the crown jewel for plate size cinnamon rolls or biscuits and gravy done the way they should be. All carbed up and ready to go we head to King's Saddlery on Main Street.

It is not every tack store that has a museum in back, but then King's Saddlery is not your everyday store. Born in Douglas Wyoming, Don King was the son of an itinerant ranch hand. By the age of 14, Don learned to tool leather. He developed his own style of tooling and focused on highly ornamental trophy saddles like those given as prizes in rodeo competitions.

By 1961, when King opened his own business on Main Street in Sheridan, he was well known among ranchers and rodeo stars for his impeccable craftsmanship. Through the years, King's saddles have been acquired by everyone from local Wyoming cowboys to celebrities and dignitaries such as Queen Elizabeth, Ronald Reagan and the Crown Prince of Saudi Arabia. King ropes are famous as well and have been used in the National Rodeo Finals.

The store is more than ropes and saddles, though. They have a little bit of everything. Be careful or you will leave with empty pockets. I know this from experience. If you walk through the backdoor of the store and take a few steps across the alley you will find yourself in the King museum. With dozens of saddles, wagons, carriages and western curiosities covering every surface of the museum, there is so much to see that you could spend days looking over the collection. But we don't have days cause we are off to Ucross to see what they have in the artist gallery and enjoy the park.

Ucross is set on a working ranch at the confluence of three creeks. It brings together working artists from all fields and from across the world. Just being there will make you more creative. You can ponder on your creativeness at the beautiful park on its campus. The park was created in 2011 and has become an appreciated and well used public space for artists, visitors, travelers and neighbors. You never know who you will be rubbing shoulders with in this park. It is a tranquil, natural expression of the creative spirit of Ucross. It also features a small interdenominational chapel. The gar-

dens bloom each summer with colorful flowers and there are comfortable benches for rest and contemplation.

Had enough introspection? Okay our next stop is a battlefield. We are going to Fort Phil Kearny. This 1,000 acre historic fort includes two battle sites that were central to Red Cloud's war in the late 1860's. On the tour, visitors can view historic landmarks, archeological artifacts and specific locations of combat lines. There is more than enough interesting things at the Fort to keep you busy for hours including a bookstore, videos, interpretive exhibits and a wildlife habitat, too. Be forewarned though, it is not dog friendly.

After so much seriousness, it is time for a little fun and that is just what the Rockpile Museum in Gillette specializes in. It is built around a famous and historic pile of rocks! The rockpile is where the first settlers in the area staked their claims, and it served as a landmark to travelers, signifying that they had arrived in Gillette. There are exhibits filled with fossils, native American artifacts, wagons, rifles and other old west memorabilia. They even have a dress-up activity for kids. It really is fun.

Oh my gosh, the day has gotten away from us. It's time to get down the road and find our camp site at Cook Lake, which is located a couple miles west of Sundance. Cook Lake recreation area has 32 camp sites and 33 picnic sites. It is in Wyoming's part of the Blackhills National Forest and it is absolutely beautiful. The lake is stocked with trout, catfish and sunfish and there is even a wheelchair accessible pier. I say we catch our dinner tonight and sleep out under the stars and dream about which adventure is next.

*It is, after all, part of our Western Heritage*

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## Scrawny Girl's Stir Fry Bowls

by Michelle Christopher

I had hoped to write about the greatest backpacking food coup of all time – cinnamon rolls. But... as my attempts have ranged from doughy slime to burnt offerings, I think I'll practice some more before I share that recipe.

Instead, this article will cover post backpacking food. Post backpacking food often ranges into feast territory, with cheesy pizza, greasy burgers and ice cream as far as the eye can see. In my world, however, I tend to crave the simpler things in life. This possibly because I've made pizza in the woods, and don't have the calorie deficit other hikers do, thanks to a propensity to carry extra snacks and family genetics of a slow metabolism. Thanks, Gran. What I crave the most at the end of a long hike are fresh fruits and vegetables. These items tend to not travel well in a food bag, and the

additional water weight is generally unappreciated on long hikes. Once, an unsuspecting trail maintainer was nearly mugged because he had the audacity to peel and eat a fresh orange in front of me while we chatted. (This was day 6 of a 7-day hike, and I chose the high ground – barely.)

The idea for stir fry bowls came to me as I was cleaning out my fridge after a long weekend hike. Stir fry is awesome for using up leftover veggies as well as steak or anything else that may have checked into the extended stay region of the fridge. These bowls are extremely reminiscent of a taco salad, given the wonton wrapper shell. If you don't have wonton or egg roll wrappers lurking in the corners of your freezer or fridge, this meal will work perfectly fine in a bowl or on a plate.

### Stir Fry Bowls (for 2)

For the bowls: Heat oven to 450°F. Place oven safe bowls on cookie sheet. Place egg roll wrappers or wonton wrappers on bowl, using water to adhere the individual sheets together. Number of wrappers used will depend on the size of the bowl you're covering. I used 4 egg roll wrappers to cover a 5" diameter bowl. Brush oil over the surface of the wrappers. Bake for 10 – 15 minutes, until the shells are brown and crispy. Remove the shells from the bowls so they don't get soggy.

#### Filling options:

Cooked rice (or leftover fried rice from the Chinese restaurant)

Chopped Napa Cabbage – one small head is enough for 2 people

Carrots – 1 large carrot, julienned (matchstick sized, for the less fancy)

Snap Peas – I sliced a cup of peas diagonally

Shrimp – figure around 4 large shrimp per person

Cashews or slivered almonds

Mandarin orange sections

Mushrooms – I like julienned for these as well, figure 1-2 mushrooms per person

Orange sauce, Thai peanut sauce, whatever is languishing in the condiment section of your fridge

Sesame seeds

Sauté the shrimp in 1 Tbsp butter or olive oil. Shrimp are done when they are no longer translucent. When the shrimp are nearly done, add the carrots and snap peas, and cook until the peas turn bright green.

Warm the rice, if you're using leftovers. Layer the rice first in the shells. Then add the cabbage, carrots and peas, mushrooms, oranges, nuts and finally the shrimp. Drizzle sauce over the top, and sprinkle with sesame seeds.



# A Note From Mark Court

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## Gong Farmers

### Sewage Handlers of the Middle Ages

Through history, the disposal of human feces had to be dealt with. From dropping the load on the ground and covering it up to digging a hole and relieving yourself to cesspits, privies and outhouses to the modern day bathroom, we came a long way with more sanitary ways of disposing of our waste. But as you know in the wastewater industry, once the toilet flushes, it is now out of sight, out of mind. The same had to be said throughout the centuries. Fecal matter just doesn't magically disappear, it has to go some place and someone needs to somehow dispose of it after your work has been finished. This is where the gong farmer comes into the picture and even Mike Rowe probably would not do an episode of this on "Dirty Jobs" because this had to be the dirtiest of dirty jobs. Mike...are you listening? I am challenging you.

During the Middle Ages, the latrine was dependent on your status. The wealthiest people would relieve themselves in the castle's garderobe. This small room was fitted with a wooded bench covering a hole that was connected to a long chute. These would be built over a large body of water like a river so it would wash away. Some castles didn't have the luxury of disposing of the waste directly into a river like the Newcastle Castle. In this case, all the garderobe chutes made their way to a room at the base of the castle where the sewage was collected. The sewage was then emptied into the dry moat that surrounded the gateway. The moat was basically the general waste disposal of practically everything. Oh, how it must have smelled.

The common person living in the villages didn't have the luxury of their very own latrine. Instead, they had the privilege of relieving themselves in a communal outhouse, better known as a "house of easement". If you were lucky enough to have your house built near the river, it was either this or construct your own privy. These little huts were very similar to those in the castle with the exception that there was a deep cesspit beneath the hut. They were made to be less than water tight so that the liquid would drain away leaving the solids behind. If they were built properly, these cesspits could last a year before needing to be cleaned. This is where the gong farmer come in.


Being a gong farmer by no means was a glamorous job. In fact, it has been considered by historians as one of the worst jobs in history. Gong farmers were well paid. Those employed at Hampton Court during the time of Queen Elizabeth I, were paid sixpence per day. Not bad wages for that time, but was that wage worth the dangerous work they

performed? The gong farmer spent his time working life up to his knees, waist and yes, sometimes his neck in human crap. Since bathing during this time in history was rare, they were allowed to only work at night between 9:00 PM and 5:00 AM and had designated living areas so that their foul body odors wouldn't be offensive to others. Gong farmers often employed young boys to lift the full buckets out of the pit. Wow, today that would violate all child labor laws. The work was also conducted in very confined spaces, so sometimes a Gong farmer and his help would be overcome by asphyxiation from the hydrogen sulfide and methane gases produced by human excrement. Good thing there wasn't OSHA back then.

As the human waste was being bucketed out of the pit, it was placed in large barrels or pipes which were then loaded onto horse-drawn carts. All of that waste still had to be removed from town so it was either spread on common ground or taken to dumps on the Thames River where the locals referred to it as Dung Wharf. Today at that site sits a place known as the Mermaid Theatre. The dung was then transported by barge to be used as fertilizer on fields or market gardens. Some of these dump sites became quite massive. Mount Pleasant (how it ever got that name I will never know) in Present day Clerkenwell, London, occupied an area of 7.5 acres by 1780. The EPA and DEQ would really have a field day with all of these violations.

As time passed, privies spread to the residences of ordinary citizens. They were built in the back yards with alley access to avoid the need to carry barrels through the houses to the streets. On occasion, there were gong farmers that would not dispose of the waste as required. The penalty for such violations were rather harsh. One London gong farmer who poured effluent down a drain was put in his own pipe filled up to his neck with filth and was put on display in Golden Lane with a sign detailing his crime. And we thought DEQ and the EPA were harsh with their punishments.

Today, the handling and disposal of sewage and its byproducts is much more advanced than the days of those men that likely had the worst job that was ever known to mankind. Advancements today have minimized diseases and are keeping our land and waterways cleaner. So many people say that they hate regulations, but not all regulations are bad. If it wasn't for sewage handling and disposal regulations of the 21<sup>st</sup> century, many of us just might be gong farmers of the past instead of the certified wastewater professionals today

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## Another Hidden Gem

Being a Circuit Rider allows many trips to become a wonderful adventure, most days. When your office, so to speak, is always changing, you just never know what's around the next bend in the road.

So many small systems are geared up for the summer and trying to put 2020 in their rear-view mirror. We sometimes take for granted what many tourists come here to see. Most dude ranches are booked solid from May through September already and are looking forward to a great year. I can see why Wyoming is such a wonderful place to come to visit. Take some time to enjoy the best spots our great state has to offer.

One section of Wyoming that is a true gem of the state is the Sunlight Basin and is off the beaten trail. As you drive out of Cody heading to Montana, just look towards the beautiful mountains. There is a little sign that is easy to miss pointing out the road to Sunlight Basin. If in your travels you have the time, it is worth the trip. Make sure you pack lunch, and your ride is in good working order for this adventure. The one thing that struck me was the road, it never seemed to stop going up. Heading up those switch backs, dodging the occasional critters that call them home was awesome. I can



see why so many locals recommend taking the long way up the hill. As with most things, what goes up also must come down, and yes it seemed never to stop going down.

As we made our way across the top section, a short stop looking over the valley is a must. I have been blessed to see many beautiful views in Wyoming, but the view on the top of that mountain may just take the cake!

Then the trip to valley floor started, and down you go. The sightseeing takes a back seat to watching the road, for sure. I was fortunate enough to be behind someone who knows the road, and took our time hitting the valley floor.

Once at the bottom, this valley is worth the trip. Elk, deer, and a few bears are just some of the highlights that are around the next corner. The basin holds a few small dude ranches and campgrounds that can be visited and may be well worth the trip.

While helping a small system complete a seasonal start up, I was struck by the lack of tourists in the area. I'm sure as the summer progresses that will change. Helping out some small systems is always a pleasure no matter where my travels take me, however, many small issues always seem to come up.

On the water side, make sure all your required paperwork finds its way to the EPA. Do not forget the CCR reports, or the monthly sampling. If your system is scheduled for a Sanitary Survey, make sure to have all the needed paperwork for the inspector. If you are a new operator for your town, WARWS is always willing to swing by and help out with any issues. Sometimes having another set of eyes on the system can save getting the dreaded LOV letters we all love so much. On the wastewater side, make sure the required monthly sampling gets done, as well. Then onto the wonderful DMR's, and sent off. These seem to always come up as issues traveling around the state.

As we head into the halfway point of the 2021, and summer is finally here, enjoy the great state we call home. Sunlight Basin is just one of many areas in our state that is an awesome day trip that is a must see for sure. Stay safe!



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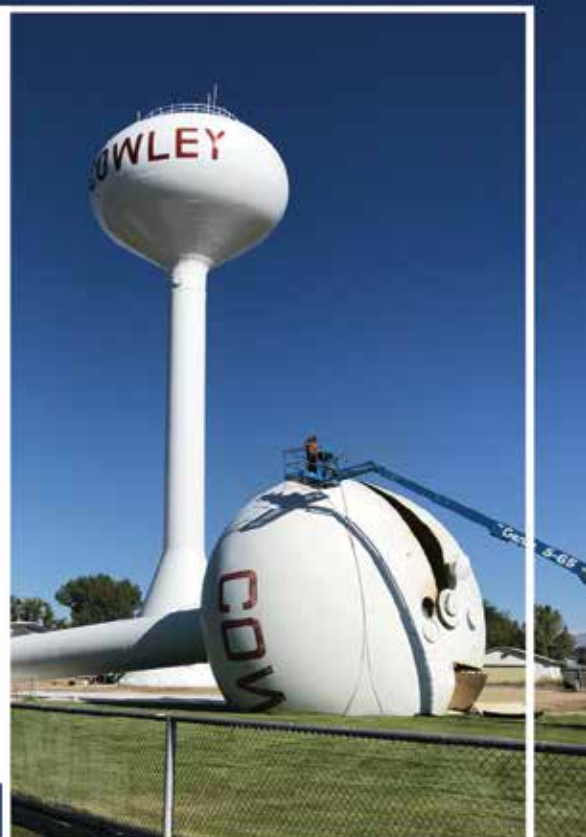
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