

ServiceLine

The Official Publication of the Association of Rural Water Systems


**SDARWS
RECEIVES
PUBLIC
RELATIONS
AWARD**

**AGING
INFRASTRUCTURE
WILL CREATE
PROBLEMS**

**LOOKING TO
BRING MISSOURI
RIVER WATER TO
RAPID CITY**

**HOW COLD IS
TOO COLD?
COLD WEATHER
PROBLEMS FOR
STORAGE TANKS**

**DEALING WITH
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FROM THE SDARWS PRESIDENT

RON GILLEN, SDARWS PRESIDENT

SDARWS WATERPAC RAFFLE GOES VIRTUAL!

WaterPAC is a crucial resource that aids the work SDARWS organizes and accomplishes to help Congress and State Legislators understand how vital clean, safe, affordable drinking water and wastewater services are to our rural communities. The South Dakota Association of Rural Water Systems raised \$4,620 at the 2020 conference. Due to the cancellation of the 2021 ATC, we looked for ways to continue this important fundraiser. We have partnered with RallyUp, an online fundraising app for raffles.

SDARWS conference-goers have contributed \$35,100 over the last eight years. That is a commendable level of contribution that demonstrates the efforts that our rural water family has made to help educate local water system officials. Additionally, these resources have enhanced the grassroots effort of the NRWA as they advocate for our priorities concerning regulations and funding issues.

Thanks again to everyone associated with the South Dakota Association of Rural Water Systems for your past support of WaterPAC. Please visit sdarws.rallyup.com/sdarws and make a contribution. 💧

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OPERATOR CERTIFICATION TRAINING AND EXAMS

Course	Date	Location
Basic Water Treatment Online Course	December 8-10	Webinar by SDARWS
OpCert Exam (1 Seat Left)	December 10-1:00 pm	Spearfish-Holiday Inn
OpCert Exam (Session Full)	December 16-12:30 pm	Pierre-Matthew Center
Basic Wastewater Treatment Online Course	January 26-28, 2021	Webinar by SDARWS
OpCert Exam	January 28, 2021-1:00 pm	Webinar by SDARWS
Water Distribution Online Course	February 23-25	Webinar by SDARWS
Wastewater Collection Online Course	March 9-11	Webinar by SDARWS
Basic Wastewater Treatment Online Course	March 23-25	Webinar by SDARWS
Basic Water Treatment	April 6-8	Sioux Falls-Ramkota
Small System Water Treatment Workshop	April 27	Rapid City-Ramkota
Small System Water Treatment Workshop	April 29	Huron-Crossroads/Events Center
Intermediate Water Treatment	May 4-6	Sioux Falls-Ramkota
Advanced Water Treatment	May 18-20	TBD
Stabilization Pond Workshop	June 1	Huron-Crossroads/Events Center

More classes/exam sessions will be scheduled for 2021.

All classes/exams are tentative based on the status of the pandemic.

HOW DO I ATTEND AN ONLINE WEBINAR?

First, register for the class online at go.activecalendar.com/sdarws. You will not need to set up a username nor a password. Upon registration you will need to enter a valid email address for each registrant or we will not be able to send you the following: After you are registered, SDARWS Trainer Jim Zeck will send you a link with instructions on how to get signed up for the online course using Zoom. When registering on Zoom we ask that you use your full name instead of a handle so we know who you are when you logon to the course. You will also get instructions on how to access the course materials to download and which material you may want to print off (typically the ABC Formula Conversion Table and the Math Handout) prior to the day of the course. If you have multiple participants from one system, please include them and their email in the go.activecalendar.com registration process. During the start of the course you may be asked to use the chat function to let trainer Jim Zeck know who is in attendance at your site if you have more than one person. You will also need a pen/pencil, notepad,

and calculator available. The webinars are accessible via computer (may need headphones or speakers if not built in), smartphone, or tablet (the bigger the screen the better). During the webinar, if you have questions you are able to ask them by typing your question in the Q&A box. There is a possibility to request to turn on and use a microphone on your end if you have a very specific question or comment. Attendance will be taken periodically during the duration of the webinar. Certification webinars are not recorded - you must attend on the day the class is given for credit.

HOW WILL THE OPCERT EXAMS BE GIVEN DURING THE COVID PANDEMIC?

- If any examinee feels ill on day of exam, they are to stay home.
- Any examinees showing any symptoms will not be allowed to take exam and anyone showing symptoms while taking exam while be told to leave with exam being confiscated.
- Masks may be worn, or may be required by the venue.
- Extra personnel will not be allowed in Foss Building or exam room.

Exams at Matthew Center/Foss Building-Pierre:

- You may not enter the building without an escort. At 25 minutes before the exam start time, please line up at the front door of the Foss Building on Capitol Avenue observing social distancing. A proctor will meet you at the front door and escort you to the exam room. DENR rules require that upon entering the building, you must sign in and have your temperature taken. If you are late, you risk not getting into the building to take the exam.

Exams at Other Locations such as Motels/Water/WW Plants:

- No-one enters exam room before proctor. All materials/people will clear room after class has ended if applicable. Please remain in parking lot or lobby maintaining social distances. Line up at the front door of the exam room 20 minutes before the exam start time and observing social distancing.
- When exam room is ready, proctor will invite each examinee into room to an assigned seat with exam already in place.
- When you get seated, you are not to start your exam. You are to wait until all examinees are seated, exam instructions are given, and exam session will start.

- Pencils/calculators/pencil sharpeners will not be provided. You must bring your own.
- No receipts/exam applications/schedules will be available. For a receipt, call 605-773-4208 or email rob.kittay@state.sd.us after the exams and one will be emailed to you.
- Examinees needing to leave exam room during exam such as bathroom use will be allowed to do so; however, only one person may leave at a time.
- Examinees with a question on exam will come forward to the proctor's table (maintaining social distancing) to ask question.
- When examinee is done with exam, they will come up to proctor's table and hold up their exam booklet/answer sheet so proctor can determine that answer sheet has been completed properly. After proctor gives OK, they will put answer sheet inside booklet and leave on table without proctor touching exam.
- Examinees are then to leave exam room at motels/water/WW plants or the Foss Building/Matthew Center directly.

For Study materials, visit: www.abccert.org/testing_services/ExamReferences.asp

For more information contact SDARWS Trainer Jim Zeck: 605-201-9568 or jzeck@sdarws.com

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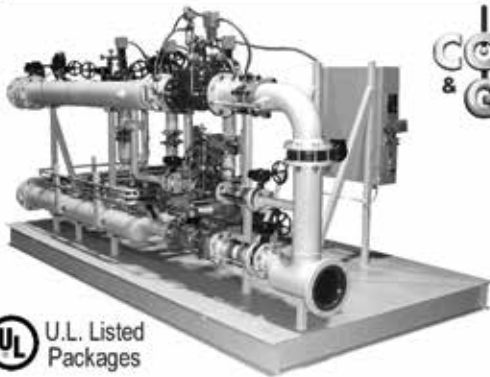
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SDARWS STAFF DIRECTORY



KURT PFEIFLE

Executive Director

kpfeifle@sdarws.com
605-204-0125



STEVE ATTEMA

Training Specialist

sattema@sdarws.com
605-270-1766



JIM ZECK

Training Specialist

jzeck@sdarws.com
605-201-9568



MIKE MOELLER

*Technical Assistance
Training Specialist*

mmoeller@sdarws.com
605-270-4989



NICK JACKSON

West River Circuit Rider

njackson@sdarws.com
605-641-4557



GREG GROSS

East River Circuit Rider

ggross@sdarws.com
605-201-6026



ROBYN BROTHERS

Office Manager

rbrothers@sdarws.com
605-556-7219



JEFF FOSSUM

East River Circuit Rider

jfossun@sdarws.com
605-201-9561



JEREMIAH CORBIN

*Source Water Protection
Specialist*

jcorbin@sdarws.com
605-270-3894



BILL THORSON

*Technical Assistance
Training Specialist*

bthorson@sdarws.com
605-201-0170



JENNIFER BAME

*Communications &
Marketing Coordinator*

jbame@sdarws.com
605-556-7219



DANNY AYERS

*East River Wastewater
Technician*

dayers@sdarws.com
605-291-2299



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FREE MASKS AVAILABLE

South Dakota Association of Rural Water Systems (SDARWS) and Water and Wastewater Agency Response Network (SDWARN) has worked with EPA and FEMA to secure a limited supply of cloth facemasks for water sector personnel. SDWARN is partnering with SDARWS to help distribute these cloth facemasks.

ABOUT THE CLOTH FACEMASKS:

- Single size (one size fits all)
- Fabric touching skin is 100% cotton
- The cloth masks are reusable and machine washable up to 15 times
- NOT for use with chemicals or in hazardous environments where N95 or other respirators are required
- If you are in need of masks for utility personnel, please scroll down and fill out the online request form, and we will get you on the list to receive these essential supplies.

You will be asked to provide basic information about you and your water system such as your PWSID or NPDES Permit number and the number of FTE at your system. This is to verify that you are a South Dakota water or wastewater agency.

SOME KEY POINTS OF THE PROGRAM ARE:

- Cloth masks are being made available to all water and wastewater agency employees in South Dakota.
- The cloth masks are for all public water and wastewater system employees; masks are not exclusive to field workers and operators.
- Identify the number of cloth facemask requested
- Once approved, you will receive an email to confirm the number of cloth masks you will receive and confirmation of arrangements made for pick-up or delivery of the facemasks.

You do not need to be a member of SDWARN in order to receive masks, however, if you're not a member, we strongly encourage you to join. More information can be found on SDWARN's website by going to www.sdwarn.org.

REQUEST MASKS BY EMAILING KPFEIFLE@SDARWS.COM

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The hard work of dedicated SDARWS employees helps South Dakota's rural water and wastewater systems to have safe, reliable and quality water. SDARWS asks for your letters of appreciation in return for our on-site assistance. These letters are used to help obtain funding to continue these programs.

Please submit letters via email to: info@sdarws.com or by mail to: South Dakota Rural Water, PO Box 287, Madison, SD 57042

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SDARWS RECEIVES AWARD FOR ACHIEVEMENT IN PUBLIC RELATIONS

The South Dakota Association of Rural Water Systems (SDARWS) was recently recognized for Outstanding Achievement in Communications, Publications and Public Relations by the National Rural Water Association.

SDARWS is the only Rural Water Association in the nation that produces a consumer magazine. Quality on Tap! is created in-house and published quarterly along with 17 participating Rural Water Systems. Thirty-five thousand copies are mailed quarterly and reach about half of our rural water consumers in South Dakota. Quality on Tap! highlights water issues affecting consumers and proves successful in creating a unified voice for rural water in our state. Other publications produced by SDARWS include ServiceLine magazine, Rural Water Bi-Monthly eNews, JobConnection eNewsletter, and Ripples Legislative eNewsletter.

“Our publications focus on water conservation, stewardship, regulations, as well as promote the Association. The

consumer magazine is a cooperative effort between several rural water systems and the Association and works to unite us as one voice for water in our state,” said Jennifer Bame, SDARWS Communications and Marketing Coordinator.

Jennifer Bame administers SDARWS’ public relations efforts. Jennifer is a graduate of South Dakota State University with a B.A. in Journalism/Mass Communications and has been with SDARWS since 2012. The Association has also received this award in 2016 and 2018.

“We are incredibly proud of our marketing effort and continually look for new ways to promote rural water through as many mediums as possible, including social media, print and, digital publications. We also promote rural water at farm shows and children’s water festivals throughout the state,” said Bame. “SDARWS is also very active on social media with almost daily posts highlighting our work, as well as providing education on water issues.”





HOW COLD IS TOO COLD?

Cold Weather Problems for Storage Tanks

By **Nick Jackson, SDARWS Circuit Rider**

A frozen water storage tank whether it's an elevated tank or a ground storage tank is worse than no tank at all. How does a storage tank freeze, and what happens when it does? Most say water tanks tend to ice up and freeze during the nighttime when water demand is at the lowest point. People tend to be sleeping, not taking showers, washing clothes or even running a faucet. Water demand falls to a drip and all that water in the tanks just sits there, not moving or refilling with fresh (and warmer) groundwater.

Storage tanks are primarily either a ground tank, a standpipe or an elevated tank. Ice formation inside potable water storage tanks is a common occurrence in South Dakota during the winter. Depending on the average air temperature and the amount of turnover, ice formation can range from a thin skin on top of a water tank to a massive ice cap that can weigh several tons. While most people enjoy a little ice in their glass of water, thick ice in a water tank can spell disaster. Like an iceberg, a massive plug of ice can scrape the sides of a tank as the water level fluctuates. If ladders and other internal hardware inside a tank become frozen in the ice, the rise and fall of the ice cap can literally tear the hardware away from the walls. Numerous examples exist around South Dakota over the years of tanks that have been badly damaged or even ruptured by the action of ice. Here are just a few examples of iced tanks.

- A ground tank located in south-central South Dakota froze leaving the bottom of the tank rounded off and pulled away from its anchors.
- A central South Dakota stand pipe froze and spit open.
- A township tank overflowed and froze all the way down the outside of the tank making it inoperable.

- A north-central South Dakota standpipe froze in its elevated tank.
- A city in western South Dakota has had three ground tanks where ice plugs froze at the top and dropped to the bottom of the tanks years ago.
- A homeowners association in western South Dakota had an underground concrete water tank froze cracking the walls of the tank.
- A steel storage tank in a commercial campground froze rounding the bottom of the tank.

Even modest damage may require partial or a complete overhaul, costing hundreds of thousands of dollars.

WHAT MAKES TANK FREEZE?

What makes storage tank freeze? Basically, there are three causes: static water conditions (lack of sufficient water turnover), a tank overflow, and improper design of the structure. Under each cause falls a number of contributing factors, for example:

- Static conditions (most common) occur when tanks are reserved for fire protection or when a tank is too large for the present system usage.
- Water systems utilizing chloramines as a disinfectant with less turnover becomes old water creating disinfection by-products that can potentially be hazardous to your water system.
- Overflows may be caused by leaky valves or frozen controls for pumps or altitude valves.
- Troublesome design elements may include vent design or insufficiently installed pipe or riser.

With such a definitive list, you might think that preventing cold weather problems with tanks is an exact science. It certainly is not!

As the water level rises and falls within the tank, the ring of ice gets thicker and thicker. Eventually, even the center of the tank becomes frozen over, but that ice is repeatedly shattered and refrozen by the piston like action of the rising and falling tank level. The ring of ice expands as it freezes, pushing against the walls of the tank. When water levels fall, the massive ring of ice clings to the sides of the tank, pulling down on the tank walls. When water levels rise, the collar is submerged, and its buoyancy pulls the walls of the tank in the opposite direction. This stress in extreme cases, can buckle the sides of the tank.

COLD WEATHER OPERATIONS

A number of steps can be taken to prevent freezing. Some of these steps must be taken as part of the design; others are a matter of operations.

Achieve water turn over, with proper management and operation, the heat needed to prevent freezing can be added to the tank with fresh treated water. Pumping management can be used to achieve turnover in small systems. During the day, pumps are used only to maintain the minimum emergency reserve level otherwise they are turned off. At night, the tank is filled. This not only ensures flow during periods of low demand, but it adds warmer water at night, when heat loss is at its peak. Larger systems, pumps are usually sequenced to meet demand. Consider changing winter operating procedures. Let system water pressure drop a little more than usual, then switch on several pumps at nearly the same time. This will cause greater fluctuations in the water levels of the storage tanks.

Lowering high water level: if it is possible to keep less water in the tank during the winter months say to about 10ft, this minimizes the probability of ice forming on the upper curved portion or roof support structure.

Keep an eye on your altitude valves: they are often used in systems where tank's high water level is lower than the pressure gradient of the system. Belle Fourche is an excellent example of using altitude valves as to not to overflow their tanks. Altitude valves may malfunction even in good weather. Freezing weather brings special problems. For example, frozen pressure sensing lines give the valve false signals. Usually this causes the valve to stay open, and the tank overflows. I recall one system who had issues where their pumps remained on, causing the whole treatment plant lower level to fill until water came out of the vents.

Check ground cover on connecting pipes: a common cause of tank freeze ups is lack of protection for the pipe leading to the tank. Sometimes soil conditions make it impossible to install the tank foundation deep enough to provide adequate frost cover. I have seen where improvements were made to remove dirt for beautification or road grades, not leaving sufficient cover for frost protection.

Newer technologies have installed various circulating pumps or mixer pumps to constantly keep the water moving to prevent freeze ups. The theory behind this was, if the warmer inlet water

could be physically transported to the top of the tank, it would greatly reduce the rate at which ice would form. Of course this is at a great expense to any system, large or small.

WHEN THE TANK FREEZES

When a tank freezes, the following may result:

- inside overflow or other piping breaks
- ladder, strut braces, roof supports or other fixtures in the tank are pulled out by the ice, making a hole at the point of attachment
- ice pressure expands riveted or bolted seams, or breaks plates, welds, bolts or rivets
- leaks due to corrosion become apparent
- overflow through overflow pipes, all sorts of problems can develop
- overflow through the roof hatch or vent will form large icicles, weighing tons on tank exterior
- icicles form, creates a hazard for all people and objects below, possibly causing tank structural failure

REPAIRING FREEZE DAMAGE

After the cold weather is over, the tank should be drained and thoroughly inspected for any damage caused by the overflowing or freezing. If modifications are recommended to prevent recurrence of the problem, they should be done when the weather is warm, NOT next winter.



Consider changing your winter operating procedures so the water in your tank doesn't turn into ice.



NICK JACKSON joined the SDARWS staff on 2001. He previously worked for seven years at the City of Custer Supervisor for the Water Department. Nick holds a Class II Water Distribution, Class II Water Treatment, Class II Wastewater Collection, Class II Wastewater Treatment and Stabilization Pond certifications.

He is a certified instructor in First Aid, CPR, and AED instructor through the American Heart Association and the National Safety Council, and a certified South Dakota Restricted Plumbing Contractor since 2004. Nick also served 14 years in the United States Marine Corps, and then served 25 years in the South Dakota Army National Guard. Nick also volunteers with small Ambulance Services in south-western South Dakota.



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I DON'T DO COMPUTERS



By Jeff Fossum, SDARWS Circuit Rider

How long has it been since you took a bunch of pictures with your camera to find out no film was loaded, or you forgot to open the lens cap on your camera?

How long has it been since the big surprise of too many long phone calls that you were charged long distance from the phone company?

When you took typing in school, how many typewriters were manual, and how many were electric?

When did you shut off the landline phone and had to get that "new phone?"

How long have you had a thermostat that adjusted the temperature of your home without turning the dial?

Have you taken pictures or videos of your children, grandchildren, or pet, sent the contents halfway across the world in seconds, and wondered what was taking so long?

Now let's jump into your car; the system analyst or backup camera alerts you something is in your driving path. We won't even get into everything it takes to drive the vehicle forward.

Now the big ones! Has your farm implement driven itself across the field at the end of the field give you a written report on what just happened while the operator was watching "Family Feud" on the monitor.

I know a big part of our reservation of technology comes from that "typing class" of long ago (before the invention of correction tape). Your final paper could only have three typos, and you had to make sure to leave enough room for the footnotes, or you'd have to start all over! If you type at my

speed, this takes a long time. I understand and have lived some of the fears of the last hours of computer work just disappearing with hitting only one key, or experiencing the electricity blink, and all that work goes down the drain. But deep down inside, we like what the computers do so automatically. Computers make our lives easier to remember birthdays and important dates, that if missed would make quite a difference (sorry dear about year I forgot our wedding anniversary).

Now tell me you don't do computers!

Let's move to the water and wastewater world. How has the computer made life the norm? Think about Variable Frequency Drives (VFDs) to control the motors on pumps. We only use a small part of what is possible on these COMPUTERS! I know one operator that had lost one leg of his three-phase power. With technical support in the middle of the night, the VFD was used to change the single-phase power into three-phase power. So, what really happened that night? The operator was able to run the pump! Because of computers, this event changed from an emergency to just a short inconvenience. The operator was able to go back to bed for the rest of the night.

Let's look back again at that tractor that guides itself across the field and that cell phone (ahem - computer) in your pocket. Did you know that most personal cell phones have more thinking ability than the computers NASA used on the Orion space shuttle mission to the moon?! Think about the last time you knew where a curb stop was (two years ago) after it had been covered up with a load of black dirt (those darn things can hide). The GPS coordinates your phone or iPad (*ahem* - computer) will lead you close to the exact place of that valve.

More and more every day, computers are woven into our daily lives. The next question we need to answer is how we will embrace computers to make our daily and work life easier? We have all this help available at our fingertips. I feel COMPUTERS are like having lifesaving medicine in the medicine cabinet, and every day we're opening the door just far enough to see if the medicine is still waiting. Leaving this medicine on the shelf and not using it does not help anyone! We need to swallow some pride, go to some community education classes or get that young person (*gasp* - millennial!) to help us embrace the use of technology to make our work life easier and leave more time for enjoying life.💧



JEFF FOSSUM joined the SDARWS staff in February 2018, as a Circuit Rider. He previously worked for 32 years at the City of Canton, SD as the Water/Wastewater Superintendent. Jeff holds a Class II Water Treatment, Class II Water Distribution, Class II Wastewater Treatment and Class II Wastewater Collection. His interests include gardening, woodworking and talking.



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UPDATES, REPAIRS, & MODIFICATIONS

By Bill Thorson,
SDARWS Training/Technical Assistance Specialist

Several systems are staring down some big decisions. Do we update, modify, or just repair what is needed???? How much is it going to cost???? Where are we going to come up with the money???? If you ask some or all of these questions, you have a headache about to get worse. Budgets are not usually flush with excess funds. Many systems and towns are in the same boat; it's time to upgrade or repair a significant part of the utility system, and the money is just not there. A rate increase can cause an uproar, but it is a necessary evil. The folks who loan out money like to see the ability to repay the loan. If your rates are too low and they don't see the ability to



Sewer main – repair or replace?

repay, then the funds will not be allocated. There is very little “free” money available anymore. However, interest rates are very manageable at this time, but if your rate structure needs to be adjusted, then you have some work to do.

Many years of systems kicking the problem down the road lead to increased repair costs or replacement in a utility system when the problem can no longer be ignored. Putting off increases in rates may be a problem you now have to deal with in your system. Many boards will look to other systems around them to gauge where to set rates, but the systems around you do not have the same costs or even the same headaches as your system. Proper rate analysis is the only way to determine the appropriate rates needed to run your system and stay ahead of repair and maintenance headaches. If you would like to do a proper rate study, contact South Dakota Rural Water Association staff, and we can help determine the needs of your system when it comes to how much you need to operate and maintain. With your input, we can assist in finding an equitable and feasible rate structure to accommodate needed funding in your system. ●



Brick manhole partially collapsed on a sewer main.
Repair or replace?



BILL THORSON joined the SDARWS staff in March of 2018 as a Wastewater Tech. Bill transitioned to Trainer/Technical Assistance Specialist with SDARWS in October of 2019. Bill previously was employed with the City of Canton as Public Works Director for nine years and water/wastewater operations specialist for 19 years. Bill holds Class II certifications in Water Treatment, Water Distribution, Wastewater Treatment, and Wastewater Collection. Bill is NASSCO certified in pipeline and manhole inspections. Bill is also an SDWWA board member.

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AGING INFRASTRUCTURES WILL CREATE PROBLEMS

By Mike Moeller,

SDARWS Training/Technical Assistance Specialist

A system recently contacted the South Dakota Association of Rural Water Systems with a leak on a water line. The system told SDARWS that the leak was on an eight-inch cast iron line originally installed in the 1970s. The water from the leak was surfacing 30 feet down the hill from where the water line was located.

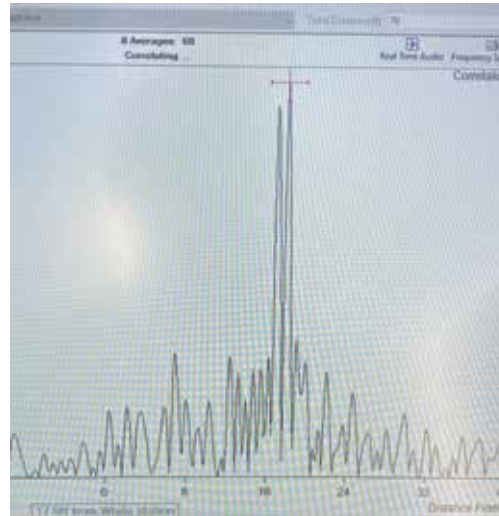
SDARWS used its leak tuner to listen to a portion of the exposed cast iron main and the mainline valve to determine which end of the line the leak was possibly closer to. The noise heard on the line from the leak was almost the same and could not be determined which end it was closer to. SDARWS then decided to use its correlator to determine the location of the leak on the waterline. A correlator uses two listening sensors that send data back to a receiver hooked to a computer. The computer has a program that takes into account pipe type, pipe size, and distance between the sensors to determine the possible location of the leak based on how loud the leak is and how sound travels through the specific material of the pipe.

Once the possible leak location was located, excavation began to dig up the leak. Due to soil composition in the leak area, the water did not surface in the trench until the soil was excavated within a foot of the waterline.

The area was excavated and back sloped to prevent a trench cave-in with all the loose rock used as backfill when the line was installed, and the leak was found. The line took a 90-degree turn, and the leak was on the welds of the elbow used to make the turn.

Once the system was drained, a welder was brought in, and the fittings were re-welded, pressure tested, and the leak was repaired.

Water lines like this one are a constant problem throughout our state. The water line is 40-50 years old and will keep causing more problems in the future as its age increases. Many systems in the state have aging infrastructure that needs replacing. The largest problem with replacing these water lines is funding. Funding agencies are available with low-interest loans and even grant programs to assist these systems. Still, some systems do not meet the funding agencies' requirements to qualify for the loan and grant programs. It is a never-ending problem for many small systems. Until water users understand that water rate increases are a necessary evil to keep the water system operational, aging infrastructure issues will continue. 💧



Correlation screen showing leak location and intensity.



Inspecting the leak on the fittings.



Water surfacing in the bottom of the trench.



Repaired cast iron line.



MIKE MOELLER has worked for SDARWS since 2014. He previously worked at Dakota Pump and Control for five years, and served 30 years with the South Dakota National Guard. Mike also holds an Advanced Safety Certificate from the National Safety Council.



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A young child is in a swimming pool, wearing large, colorful goggles and a red and blue striped shirt. The child is giving a thumbs-up gesture. The background is the blue water of the pool.

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LOOKING TO BRING MISSOURI RIVER WATER TO RAPID CITY

By **Jeremiah Corbin**,
SDARWS Source Water Protection Specialist

The most important environmental factor for community settlement has always been water. The greatest challenge that today's community leaders face is ensuring that quality water will be available. The West Dakota Water Development District board has been wrestling with this concept for the past several years. They have reached out to neighboring stakeholders to gauge interest in bringing Missouri River water to the Rapid City area.

The genesis for their conversation is future use water permit #1443-2. That permit grants 10,000 annual acre-feet (3,258,514,290 gallons) for "future municipal, industrial, commercial, and rural water system use" of Missouri River Water to the West Dakota Water Development District (WDWDD). The district is required to renew the permit every seven years. The last renewal period provided an opportunity for the district to assess the region's potential need for that future water.

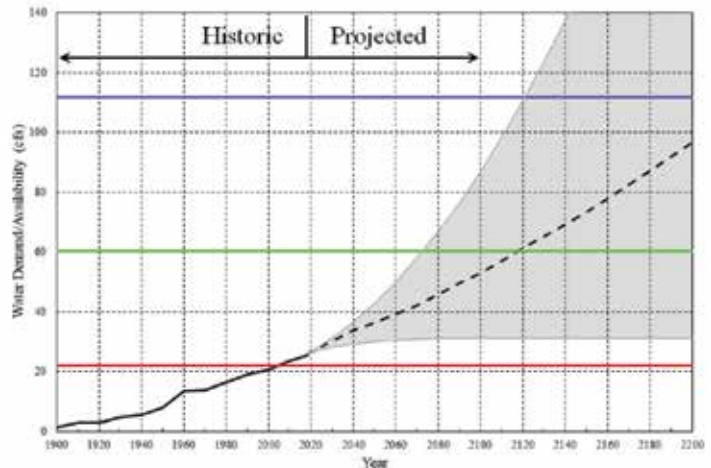
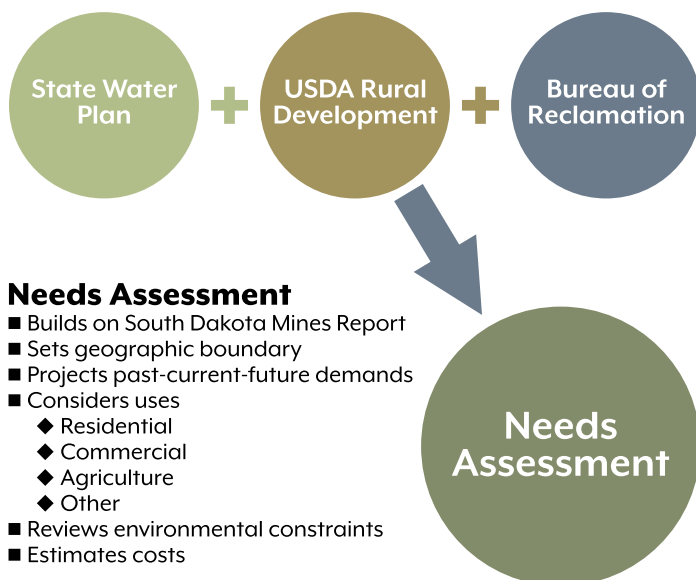
WDWDD commissioned a group from the South Dakota School of Mines & Technology to develop a report. The Final Report entitled: Missouri River Water Allotment Study for Future Water User Permit 1443-2 was completed in December of 2019.

THE REPORT PRODUCED THREE FINDINGS:

1. Local water supplies currently meet demand; the region is not currently in need of new sources
2. Based on projected growth, the area may not be able to meet future water needs
3. The district should retain its future water rights permit.

In addition to the findings, the report suggests potential routes for bringing Missouri River water to the area and provides an estimated cost to do so (in 2019 dollars).

The district started a meeting of stakeholders in the second half of 2020 to look at the viability of developing a pipeline to deliver water to the area. The meeting's topics ranged



from the discussion of past regional water system projects to presentations by potential funding entities.

The group has now reached the point of developing a needs assessment. As part of that, they are soliciting water systems that may be interested in partnering on a project that brings Missouri River water to Western South Dakota. They are asking systems to look at their system's water needs will be in 50 years. Projects such as these take decades to come to fruition.

Once the final stakeholders and their needs have been identified, a more realistic cost estimate can be established. Once that step is complete, the group will start pursuing project funding.

The idea to bring Missouri River Water to the Rapid City area is not a new one. In the 1970's Energy Transportation Systems, Inc. (ETSI) planned to slurry coal from the Powder River Basin to coal-burning power plants in Oklahoma, Arkansas, and Louisiana. One of the possible sources of water for ETSI was the Missouri River. That project was eventually canceled in 1984 after stiff resistance from multiple railroad companies.

On the eastern side of South Dakota, Lewis & Clark RWS (L&C) started as a dream in the early 1990s, with over 60 systems being interested. By the time L&C delivered its first drops of water in 2012, the system membership had included twenty systems.

If you would like more information about this group's stakeholder meetings, contact the West Dakota Water Development District. Daniel Mulally is the district manager; he can be reached via email at wdwdd0@outlook.com.



JEREMIAH CORBIN is the Source Water Protection Specialist. He has worked for SDARWS since 2009. In his free time he serves as the Utilities Commissioner for the City of Madison. He has a BS in Information Systems from Dakota State University, and holds a Utility Management Certificate from NRWA. He is also a proud member of the Madison Rotary Club and is a 4H shooting sports instructor.



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WHO'S YOUR NEIGHBOR?

By Greg Gross, SDARWS Circuit Rider

Coming from a small town municipality, I know that resources were sometimes hard to find. Budget limitations, along with labor shortages, add to the daily struggle of the small-town operations. One resource I did eventually locate was close by and is abundant to most small towns – neighbors. Not just the guy on the street that greets you by name, I'm talking about neighboring towns, Homeowner Associations, and your regional water systems. Your neighboring operators struggle with the same issues and lack of qualified manpower that you do. Often neighboring towns may have equipment that you do not or experience you lack. You need to make the first move and get to know operators in your neighboring communities. Larger towns can often be accommodating to their neighbors. Operations specialists from a larger nearby town may actually live in your town and commute for work. They want what's best for your town as well. Most municipal workers are part of a brotherhood of unsung heroes; they will understand your situation. When I was a new city operator, I thought that I was a lone ranger and had to do everything myself. I was unaware of my neighbors and their abilities. Another great source of knowledge and equipment is the South Dakota Association of Rural Water Systems. SDARWS is comprised of experts in many fields, including water, wastewater, GPS mapping, safety, finance, water treatment, training, and more. Many SDARWS employees were once city or utility employees themselves and personally understand the challenges that face small communities.

The cell phone. Love it or hate it, the mini-computer in your pocket can be a great tool – it can do anything from simple math to complicated chemical equations. It can also connect you with who and where to go for help - which can be as important as knowing how to fix it yourself. I once heard someone say, “a smart person knows what they don't know,” meaning one should know when you're in over your head. One of my former employers claimed to know just enough about electricity to kill himself. Don't be that person! There are experts in every field. Find your “experts” and know when it's time to call them. SDARWS has experts that are just a phone call away and would be happy to come and help. If the problem is more than we can tackle, we can help you find the answers and the people you need.

Life is too short to fight battles alone. Reach out to your neighboring communities, HOA's, and local water systems for help. Remember that SDARWS is here if you need an ear to listen or on-site assistance. To the right is a list of SDARWS services. You can find our cell numbers on page 9. Give us a call for assistance anytime. 💧



GREG GROSS joined SDARWS in March 2017. Greg currently holds South Dakota certificates for Class I wastewater, Class I Water Distribution, Class I Wastewater Collection and Class I Stabilization Pond. Greg's work experiences include, Utilities manager in Howard for 2 years, City maintenance worker in Alexandria for 2 ½ years, and Welder/builder of water booster and sewer lift stations at Dakota Pump of Mitchell for over five years.



EQUIPMENT USAGE FEES*

(*For current members)

WATER SYSTEM EQUIPMENT

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Leak Correlator Equipment.....	\$150
Line Tracing Equipment.....	\$100
Magnetic Location Equipment	\$100
Ultra-Sonic Flow Meter	\$100
Pipe Thawing (up to 2")	\$125
Data Loggers	\$50/logger
Hydrant Flow Testing	\$100/day + \$5/hydrant or valve
De-Chlorination Equipment	\$100
HydroVac	\$150/day (5 holes) + \$25 per add'l hole**
Kubota w/Valve Exerciser..	\$150/day (5 holes) + \$25 per add'l hole**

**\$300 maximum/day

WASTEWATER SYSTEM EQUIPMENT

Smoke Testing Manholes	\$100 set up + \$25/manhole
Smoke Test Cleanouts.....	\$.50/usage
Video Inspection	\$250 set up + \$250/block
Poly-Pigging	\$100 set up (includes pigs)
Flow Monitoring	\$100 set up + \$150/week

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WEBSITE

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MAPPING FEES SANITARY DISTRICT/SYSTEM

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DATA COLLECTION

Geo Explorer 6000 cm edition	\$300/day
Juno w/ pro XH receiver	\$200/day

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Digitize Lines	\$500
Map Binder	\$250 minimum for one with 15 pgs, \$1/page after
Additional Binders.....	\$100, \$1/page
Digital Files: Google layer, map layers	\$50 per order
Additional maps: 36" wide laminated.....	\$50

*Equipment fees cover up to one day of use/service unless otherwise specified. 11.10.2020



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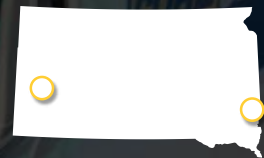
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DEALING WITH SOLIDS IN LIFT STATIONS

By **Danny Ayers, Wastewater Technician**

This one is for you guys with lift stations. If you have wastewater pumps, you just have to deal with solids in wastewater, causing the pumps' problems. NOT TRUE! There are ways to deal with solids that do not involve pulling and unclogging pumps.

Operators tend to find ways to improve their lives, and unclogging wastewater pumps has never been a fun job. Every time you open that pump, it tends to shorten the service of the pump. With that being said, why not remove those pesky rags and debris before they enter the pump.

The City of Winner was planning to rehabilitate their main lift station, which pumped an average of 0.3 MG of wastewater each day, and they had a problem with the disposable wipe type rags clogging the pumps quite often. They looked at a grinder to solve the rag issue, but a grinder would require excessive maintenance. A grinder would allow inorganic debris to end up in the lagoon adding to nonbiodegradable sludge and hampering the treatment process.

So why not remove the problem ahead of the lift station?

After doing considerable research, the lead operator Mark Leibrich and the public works director Troy Kruger found a stainless-steel vertical screen could be installed ahead of the lift station. The screen they settled on would allow the wastewater to flow through a screen plate with ¼ inch holes; as the holes plugged up with debris, the water level would rise on the screen. When the water level rose to a preset level, the auger screw with brushes of the auger flites would be activated to clean the screen. As the debris travels up the screw, it is washed by an automatic flushing system to remove the organic material and return it to the waste stream. The flites on the screw were configured to compress the inorganic material to remove excess water at the top end of the screw. The dewatered material would then drop out into a trash bag to be removed with the regular trash.

The Winner team also installed a splitter pit ahead of the screen, which allowed the wastewater stream to be diverted around the screen to the lift station's wet well or a six-inch portable pump plumbed to the force main after the lift station.

This piping allows for the facility's uninterrupted operation during maintenance on either the screen or the lift station.

Screening out the inorganics and breaking down the organics to a ¼ inch size allowed for the lift station's uninterrupted operation, lowered loading on the lagoons, and better treatment of the wastewater in the lagoon.

After two years of operation, Mark noticed that the effluent being discharged from the lagoon was of better quality with lower numbers on TSS, BOD, and ammonia. Mark attributed



this to the organic material being broken down to a smaller size while passing through the screen and making it easier for the lagoon bacteria to process it.

If you have any more questions on this design, you can contact Danny Ayers Wastewater Tech with SDARWS 605-291-2299, and he will hook you up with Troy or Mark at Winner. ♦



DANNY AYERS joined South Dakota Association of Rural Water Systems in April of 2020. Prior to that he worked for the City of Winner as the water/wastewater Superintendent for 31 years. Danny has a Class I Wastewater Treatment, Class II Wastewater Collection, Class II Water Treatment, and Class II Water Distribution. He enjoys hunting, fishing, woodworking and camping.

FLEET Program



• The National Rural Water Association has created partnerships with motor groups to offer discounts to State Rural Water Associations and their utility system members.

• Member utilities should contact their State Rural Water Association to access the Rural Water Fleet Program.



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CERTIFICATION PRACTICE QUESTIONS

1. A WATER TOWER HAS A TANK THAT IS 30 FT. IN DIAMETER AND 40 FT HIGH AND SET ATOP LEGS WHICH ARE 80 FT HIGH, HOW MANY GALLONS OF WATER WILL IT HOLD?

- a. 314,000 gallons
- b. 211,000 gallons
- c. 147,000 gallons
- d. 28,260 gallons

2. WHAT IS THE PRESSURE READING AT THE GAUGE AT GROUND LEVEL IF THE TOWER IS HALF FULL?

- a. 231 psi
- b. 43 psi
- c. 100 psi
- d. 123 psi

3. CAVITATION IS A PROBLEM WITH PUMPS. WHAT CAN BE DONE TO PREVENT IT FROM OCCURRING?

- a. Increase Suction lift
- b. Close suction side valve
- c. Reduce the suction lift
- d. Nothing

4. TOTAL DYNAMIC HEAD REFERS TO?

- a. Static head + Suction Head + Friction Loss
- b. The height of the water tower
- c. The velocity at which water flows through the pipe
- d. The distance between the clear well level and the water level in the tower.

5. WHICH IS NOT PART OF A PUMP?

- a. Volute
- b. Impeller
- c. Wear ring
- d. Venturi

6. CALCULATE THE BRAKE HORSEPOWER (BHP) OF THE FOLLOWING SYSTEM: FLOW RATE = 500 GPM, HEAD = 140 FEET, PUMP EFFICIENCY = 65%.

- a. 10 Hp
- b. 17 Hp
- c. 27 Hp
- d. 31 Hp

7. CALCULATE THE PUMP HORSEPOWER OF THE PREVIOUS PROBLEM IF THE MOTOR EFFICIENCY IS 88%.

- a. 10 Hp
- b. 17 Hp
- c. 27 Hp
- d. 31 Hp

8. GRIT WASHERS ARE PRIMARILY USED TO?

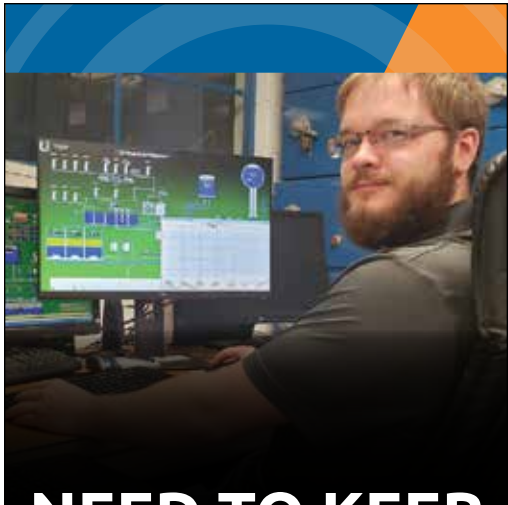
- a. Remove organic matter from inorganic matter
- b. Remove large pieces of debris from incoming flow
- c. Add oxygen to the incoming wastewater
- d. Separate BOD from COD

9. THE NORMAL DISTANCE BETWEEN MANHOLES IS?

- a. 600 – 800 feet
- b. 300 – 500 feet
- c. 100 – 200 feet
- d. Dependent on sewer size

10. ANOTHER NAME FOR A WASTEWATER STABILIZATION POND IS _____

- a. Primary pond
- b. Facultative Pond
- c. Anaerobic Pond
- d. Equalization Pond



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1. B; 2. B; 3. C; 4. A; 5. D; 6. C; 7. D; 8. A; 9. A; 10. B

MAKE SURE CONSTRUCTION'S FATAL FOUR DOESN'T COME KNOCKING AT YOUR DOOR

By Steve Attema, SDARWS Training Specialist

Every year in the United States around 5,000 people die on the job in workplace accidents. About 1,000 of those fatalities come from the construction industry which calculates to just under 3 deaths per day. A majority of these workplace deaths in the construction industry come from four hazards and is commonly referred to as construction's fatal four. These fatal four hazards are fall, electrocutions, struck by an object, and caught in/between. Whether you do a lot of construction work in your job or just some side projects at home these quick tips can help you avoid these fatal four accidents.

FALLS CAN COME FROM:

- Holes/openings in the floor
- Open sides/edges of floors, platforms, or buildings
- Improper ladder use

PROTECT YOURSELF FROM FALL HAZARDS BY:

- Covering holes with an appropriate covering
- Using guardrails and toe-boards on elevated work areas
- Use safety harnesses or safety nets when necessary
- Always maintain three points of contact when climbing/descending a ladder.

ELECTRICAL HAZARDS COME FROM:

- Damaged cords, tools, and exposed parts
- Overloaded circuits and improper wiring / grounding
- Overhead power lines
- Wet conditions

PROTECT YOURSELF FROM ELECTRICAL HAZARDS BY:

- Checking cords for damage and missing insulation. See infographic on the following page for more info on how to properly use extension cords.
- Have proper wiring and grounding with no exposed electrical parts.
- Do not overload circuits or power strips.
- Keep equipment, yourself, and anything you're holding at least 10 feet from power lines.
- Unplug and/or follow lockout / tagout procedures when servicing or maintaining tools and equipment.

STRUCK-BY OR CAUGHT-IN/BETWEEN HAZARDS COME FROM:

- Flying objects – from equipment, power tools, compressed air.
- Falling objects – tools, material, or equipment from an upper level to a lower level (including trenches).
- Equipment – moving vehicles or other equipment can hit/trap workers. Also, when lifting equipment is used the load being picked up may shift or swing and strike/trap a worker.



- Trenches or excavations that collapse.

PROTECT YOURSELF FROM THESE HAZARDS BY:

- Wear safety glasses and a hardhat whenever possible but especially when using power tools, hand tools, compressed air, or when any activity is happening above you.
- Use toe-boards to prevent items from falling to a lower level.
- Wear high-visibility clothing/vests to allow vehicles and equipment operators to see you.
- Use proper rigging techniques for lifting loads and stand clear when the load is lifted.
- Do not enter a trench unless it has been deemed safe to enter by a designated competent person. Protective systems (sloping/benching, shoring, or shielding) must be in place for all trenches deeper than 5 ft or any trench that may cave-in.

These are just a quick overview of these four hazards, please review all safety procedures for the work you will be doing. 💧



STEVE ATTEMA Steve Attema joined SDARWS in May 2014 as a Training Specialist. He previously worked for six years in industrial wastewater, and three years at Bolton & Menk, Inc. as an Environmental Engineer. Steve has a Bachelor of Science degree in Civil and Environmental Engineering (CEE) from South Dakota State University. He also holds a Class III Wastewater Treatment Certification, is an FAA certified Remote Pilot SUAS and holds Utility Management Certification with the NRW. As a Safety Trainer, Steve holds an Advanced Safety Certificate from the National Safety Council, completion of OSHA's 30-hour General Industry Training Course and certified with the Board of Certified Safety Professionals as an Associate Safety Professional.

Extension Cord Safety Tips



Roughly **3,300 home fires** originate in extension cords each year. Extension cords can overheat and cause fires when used improperly, so **keep these important tips in mind** to protect your home and loved ones.

Never plug an extension cord into **another extension cord**.

Make sure extension cords are **properly rated** for their intended use, indoor or outdoor. Never use an indoor extension cord outdoors.

Extension Cord Designations

S: Designed for General Use	W: Rated for Outdoor Use	J: Standard 300 Voltage Insulation
T: Made from Vinyl Thermoplastic	P: Parallel Wire Construction (Air Conditioner Cords and Household Extension Cords)	
O: Oil-Resistant	E: Made from TPE	

Never use three-prong plugs with outlets that only have two slots. Never cut off the ground pin to force a fit, which could lead to electric shock.

Only use extension cords that have been **approved by an independent testing laboratory**, such as the ones listed above.

Cord Length and Amperage Limits

25 – 50 Feet Extension Cords	16 Gauge (1–13 Amps) 14 Gauge (14–15 Amps) 12–10 Gauge (16–20 Amps)			
100 Feet Extension Cords	16 Gauge (1–10 Amps) 14 Gauge (11–13 Amps) 12 Gauge (14–15 Amps) 10 Gauge (16–20 Amps)			
150 Feet Extension Cords	14 Gauge (1–7 Amps) 12 Gauge (8–10 Amps) 10 Gauge (11–15 Amps)			

Always use **GFCI protection** when using an extension cord outdoors.

Inspect cords for **damage before use**. Check for cracked or frayed sockets, loose or bare wires, and loose connections. Discard damaged extension cords.

! Extension cords are for **temporary use only**. A heavy reliance on extension cords is an indication that you have **too few outlets** to address your needs. Have **additional outlets installed** where you need them.



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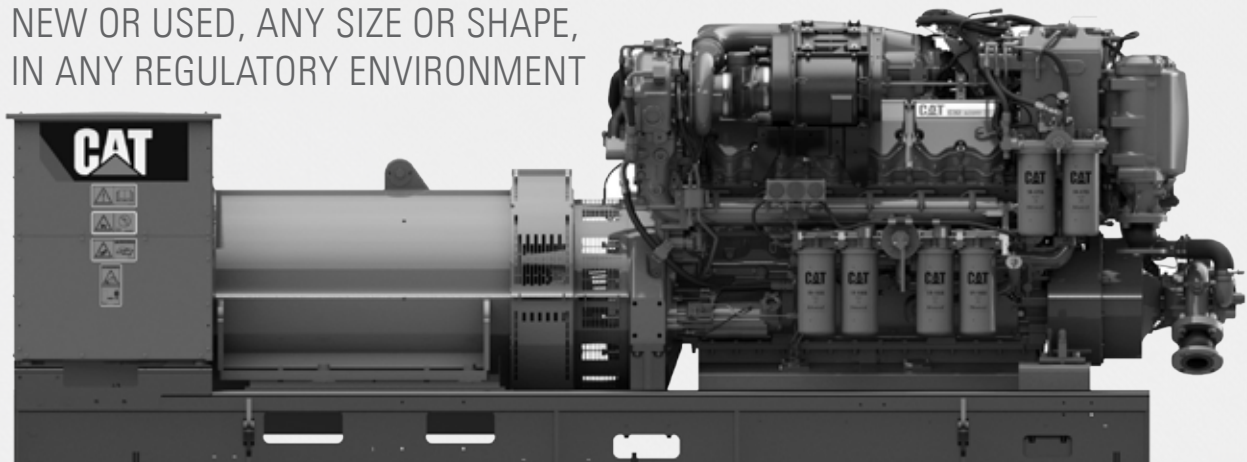
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PHOTOS FROM THE FIELD



SDARWS doing sewer camera work near the Dakota State University campus in Madison.



SDARWS assisting with hydrant repair in Highmore.



The Town Board came out to help with some leak detection in Tolstoy.



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FROM THE EXECUTIVE DIRECTOR

KURT PFEIFLE, EXECUTIVE DIRECTOR

South Dakota Association of Rural Water Systems (SDARWS) is pleased to announce that National Rural Water Association (NRWA) has been awarded a new five-year, Circuit Rider contract. The Circuit Rider program is a grant agreement provided through USDA – Rural Development (RD). Every five years the Circuit Rider contract is reissued through a public “Request for Proposal” (RFP) process. The Circuit Rider Program was up for renewal in 2020. RD published the RFP in August and it was their intent to award the program by the end of October. NRWA put together a strong proposal in response to the RFP. NRWA and SDARWS felt good about our chances to ultimately be successful in the RFP process. However, NRWA was not alone in sending in a response to the RFP there was competition. Nevertheless, SDARWS learned on Monday, November 2, 2020, that NRWA was awarded the new five-year

Circuit Rider agreement. By extension (through a subaward), SDARWS will retain all three of its Circuit Rider positions.

WHAT DOES THE CIRCUIT RIDER PROGRAM DO?

The Circuit Rider program provides technical assistance to rural water and community systems (under 10,000 population) that are experiencing day-to-day operational, financial, or managerial issues. Rural water and community system officials may request assistance directly from SDARWS, or Rural Development staff may request assistance on behalf of the system.

SDARWS Circuit Riders are Nick Jackson, Spearfish, SD, Greg Gross, Madison, SD and Jeff Fossum, Madison, SD. Nick, Greg and Jeff are all very knowledgeable in water operations, finance and managerial issues and they are ambitious and eager to lend a hand to our rural water and community systems. 💧

THE CIRCUIT RIDER PROGRAM PROVIDES TECHNICAL ASSISTANCE TO RURAL WATER AND COMMUNITY SYSTEMS (UNDER 10,000 POPULATION) THAT ARE EXPERIENCING DAY-TO-DAY OPERATIONAL, FINANCIAL, OR MANAGERIAL ISSUES.



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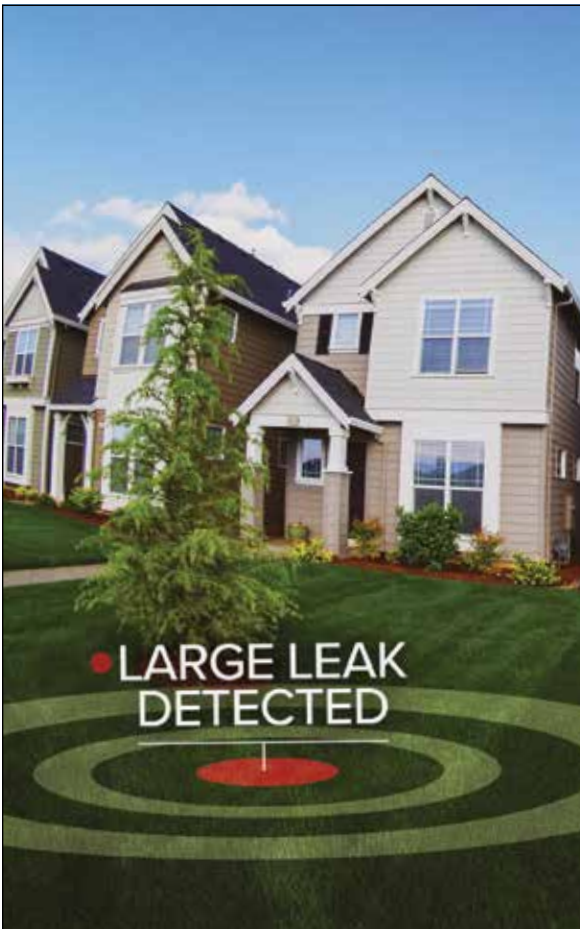
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203 W. Center Street
P.O. Box 287
Madison, SD 57042
www.sdarws.com



WATER / WASTEWATER AGENCY RESPONSE NETWORK

ATTENTION

ALL SOUTH DAKOTA WATER & WASTEWATER UTILITIES

The current state of response to the COVID-19 virus means that water and wastewater systems must commit themselves as first responders to the protection of the public's health. The uninterrupted continuation of water and wastewater service within all communities and regional providers is vital.

There may be systems, that due to an outbreak of COVID-19 require operational assistance. Accordingly, South Dakota Association of Rural Water Systems (SDARWS) and South Dakota Water/Wastewater Agency Response Network (SDWARN) is compiling a pool (list of volunteers) of certified water and wastewater operators who might be available to provide emergency on-site assistance to other systems.

This assistance could require the responder to relocate to the requesting system for up to 14 days. Water/Wastewater systems and the responding operator should be prepared to keep detailed records of their response for reimbursement either through the requesting system or other available funding.

SDWARN is administered through the South Dakota Association of Rural Water Systems (SDARWS). Communications regarding this matter should therefore be through the SDARWS office. Your system need not be a member of SDWARN nor SDARWS to respond to this message. However, if activated, the system making the request and the systems responding to the request would need to become members of SDWARN as their mutual aid agreement would become the governing documents.

If an operator is available for this effort their name, certifications and certification levels along with contact information should be sent by email to Greg Gross at ggross@sdarws.com. There is no requirement that you respond if you reply to this request.

Thank you for your attention and assistance!